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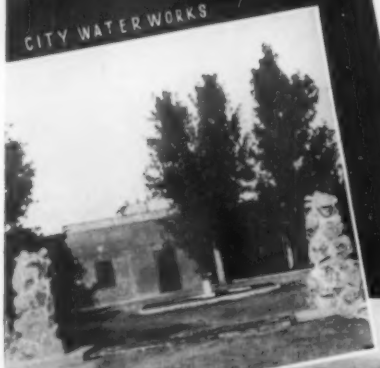
IN STERLING Colorado

Sterling, the County Seat of Logan County, Colorado, is situated in the South Platte River Valley, about 140 miles northeast of Denver, and is served by both the Union Pacific and the Chicago, Burlington & Quincy Railroads. It is an intermediate terminal point with branches extending in six directions, making it an important railroad center. The location is such as to afford it a very favorable trade territory for many miles in all directions.

Sterling is substantially built and has adequate banking and educational facilities. Its industries include sugar plants, railroad shops, flour mills, grain elevators and a large creamery. The country surrounding Sterling is, for the most part, irrigated. A considerable portion of the land in Logan County is devoted to the production of sugar beets, wheat, oats, corn, rye, barley and beans. Large numbers of sheep and cattle are fattened in this county.

Sterling is furnished with pure water direct from wells. Since 1920 the city has been 100% metered. PITTSBURGH WATER METERS were purchased at that time, and according to H. M. Krull, City Clerk, they have been giving splendid service ever since.

CITY WATER WORKS



AERIAL VIEW OF CITY

MUNICIPAL AUDITORIUM

PITTSBURGH EQUITABLE METER CO.

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PITTSBURGH WATER METERS

Electric Power Issue—National and Local

The Problem as Viewed by

ARTHUR E. MORGAN

Chairman, Tennessee Valley Authority

A VERY important decision is involved in the treatment of the power issue in TVA territory. Shall there be an effort on the part of public officials to work with the private utility companies to remove abuses, to insure maximum service at minimum cost, and to insure opportunity for public ownership where it is desired? Or shall men who administer public projects drift into an attitude of a fight to the finish against the private power companies, which might have the nature and perhaps inevitable consequence of disruption of the private systems, the destruction of legitimate investments and of economical service, and the sudden, if unexpected, throwing of great power systems into premature and unprepared-for public ownership?

I believe we should deal with the private power companies to the end of eliminating abuses, while preserving the right of the people to acquire their own power service by public ownership if they choose. In the process of transition from private to public ownership there should be respect for legitimate private investments in the utility business, and individual local committees should be required to respect the interests of the larger communities of which they are a part by preserving the economy and efficiency of well-integrated power systems. It is not wise to so center attention upon utility abuses as to fail to see the great achievements of the electric power industry in America. There has been an intelligent aggressiveness in technical development and activity in the integration of the industry which has brought about a high level of convenience and service.

I do not advocate cooperation through any naive belief that the private companies have a consistent record of good behavior. I have come to the belief that the attitude of a ruthless fight to the finish and without quarter against public ownership of power has been a characteristic position of the private utilities. One of the chief obstacles to effective cooperation of the Government with the power industry is the continuance in positions of power and authority of some utility men who seem not to have changed their habits of mind from the days of exploitation and unscrupulous use of power. So long as those in ultimate control of the industry choose to be represented by such men, the position of those who stand for open and impartial dealing with the industry is made extremely difficult. . . .

I believe that some leading utility executives are today in a mood to desire a reasonable working arrangement, and that it may be possible to arrive at a solution which will protect both public and private interests. A greater number of more public-spirited, forward-looking men are coming into control of some of the large utility systems, though that change has not yet gone as far as could be desired. This change for the better is due partly to the increasing emergence in business of innate American decency, and partly to the fact that those who control the utilities see the handwriting on the wall, and are trying to put their house in order while there is yet time. I am for recognizing any such effort. . . .

By the manner in which this conflict and others like it are handled, America is deciding little by little whether, in the great social readjustments that are taking place, there shall be a strengthening of democratic methods, reasonableness, fair play and open dealings; or whether we shall drift into bitter class controversies which lead to violent and arbitrary action, so prevalent today in several other countries. That issue is so serious, and the destiny of our country is so much at stake, that a spirit of tolerance and reasonableness on both sides is a public obligation. Such an attitude does not imply indifference or lack of aggressive action. . . . The manner in which we achieve our ends may have a more enduring influence on the country than the ends we may achieve. . . .

I favor enough public ownership to enable the country to work out effective methods on a life-sized scale, but not so much public ownership that we shall be swamped by inefficiency before we learn how to make it effective and economical. The people have a right to actual examples of public ownership to supply a basis for coming to long-time conclusions on the subject. We should not be forced to decide by abstract theory.

Duplication of facilities should be avoided. If a community undertakes public ownership, the existing private properties should be taken over at a fair price, as determined by agreement or by impartial appraisal. There should be effort to avoid arbitrary disruption of existing efficient systems. Distribution districts should be large enough to justify good management, engineering and other technical service, and adequate operating equipment. They should be large enough for efficiency, but oversize and the resulting tendency to bureaucracy should be avoided. . . .

The large private power networks within TVA transmission range depend for operating efficiency on a relatively small number of the larger cities. A campaign which would result in public ownership in ten to twenty of these cities might practically destroy the ability of the large systems to render maximum service, or to maintain economical generation and transmission systems. Effort to bring about such disruption seems to be under way. On the other hand, if distribution areas of efficient size should be taken over by the public as units, and if the properties taken over should be paid for at reasonable prices, then transition from private to public ownership could be an orderly process without destructive disruption of existing systems, and public projects would not compete with each other in a scramble to grab the best nearby territory and to avoid the less profitable communities.

In reporting on public ownership in "yardstick" undertakings, public statements should be fair and representative. There should be no hidden subsidies, either of money or services.

Where a private distribution system is taken over by the public, the loyal and efficient employees of the private system, except those in policy-forming positions, also should be taken over by the public, without loss of security or tenure.

If the TVA has power over and above its own needs and the needs of all its other customers, it should sell that power to the private utilities at about what it would cost the private utilities to generate their own power. The private utilities, on the other hand, if assured of such supply, should not build additional generating plants until that assured supply of Government power is fully used.

I am of the opinion that some type of power transmission pool, as recently suggested by the President, perhaps somewhat along the lines of the British grid system, may prove to be desirable.

The power issue is not primarily a question of liberalism or conservatism, but of discovering how to do the job best. Compulsory cooperation of public and private power organizations may be the necessity which is the mother of invention. When the mature result is achieved, it may be neither private power as we know it, nor public power as we know it, but something new in governmental methods. We should do well to reserve some of our energies from fighting over the power issue, and use them in trying to solve it in such a way as also to make a contribution to good government.

—From a statement made public by Dr. Morgan on January 16, 1937.

HOW MUCH DOES THE TELEPHONE ~~COST~~ SAVE?

It is easy to figure how much the telephone costs. It is not easy to reckon how much it saves.

A single telephone call may save a life—brighten a friendship or a day—sell a bill of goods or land a job.

One telephone call may be worth more to you than the cost of the service for months and years to come.

The telephone saves you priceless hours of time each week—spares you trips through snow and storm these uncertain winter days.

Without moving from the warmth and comfort of your own fireside, you are in touch with stores and friends and office—by telephone. The cost is but a few cents a day. In return, the telephone offers you increasing measure of security, convenience, happiness and achievement.

Every time you call a number, you use some part of a nation-wide telephone system that cost more than four billion dollars to build and employs about 300,000 people. The facilities of this entire organization are yours to command—anywhere, any time, and at small cost.

BELL TELEPHONE SYSTEM

The Local Transit Problem

So Why Not Have Better Transportation Where Needed?

FOR many years there have been a vast deal of talk and writing and numerous reports made about the inadequacy of local transportation facilities in half the cities of the country. To determine whether this condition does exist, and if it does, whose fault, if any, it is, and the remedy, THE AMERICAN CITY asked various city officials some questions.

Thanks are due these officials for the generous and significant picture they have provided of local transportation.

There has seemed to be a feeling abroad that the adequacy of a transportation system and schedule is the sole responsibility of the local transit company, with only the state public service commission standing more or less valiantly between the shortsightedness or lethargy of the company and the helplessness and need of the riding public.

THE AMERICAN CITY doubted that this was a true bill; believing that in practically every instance the city government possesses the power through intelligent leadership, if not through legal compulsion, to bring about rehabilitation where needed, and to stimulate the purchase and installation by the company of modern trolley cars, trackless trolleys or buses, in place of outmoded vehicles.

The reports received more than bear out this thesis. It is perfectly evident that the quality of the service is to a large degree a reflection of the interest and diplomacy of the municipality.

The question was asked: "*To what extent does your city government possess the power to bring about improvement in your local transportation facilities?*"

The actualities of this problem are keenly indicated by answers to this question furnished by two cities in the same state.

Says City Clerk T. E. Rosback of Springfield, Mo.: "By application to the State Public Service Commission only."

ON DECEMBER 29 LAST, WINSTON-SALEM, N. C., HELD A "ROMANCE OF TRANSPORTATION" PAGEANT HEADED BY AN OXCART AND ENDING WITH A CONVOY OF AIRPLANES. SOMEWHERE BETWEEN WERE THESE NEW BUSES THAT MARK A NEW ERA IN LOCAL TRANSPORTATION HERE

Says Mayor David L. Millar of University City, Mo.: "Practically unlimited, as we grant no franchises, only permits revokable at will."

From a narrow point of view, if the cities of Missouri desire to invoke state compulsion they can petition the Public Service Commission for help. If through this procedure they receive no redress, they may feel that they have to get along with such service as is given them.

There is, however, an alternative, requiring a little pep, a little courage, a little kindliness. During the last few years, University City has induced the company to provide modern vehicles. It has achieved this through conferences with the company. "Our only compulsion," says Mayor Millar, "is the right to refuse the use of streets." This community happens to be a residential city of 33,000 population adjacent to St. Louis, with a high percentage of automobiles, which furnish real incentive for the company to provide adequate transit.

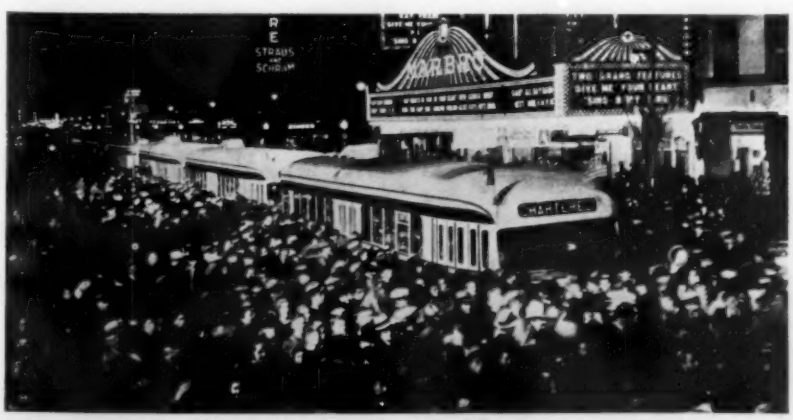
Says Chattanooga, Tenn.: "All questions concerning utilities handled by State Public Utilities Commission, Nashville."

Memphis, Tenn., states that it has power to bring about improvement through the franchise requirement that the company "must give public first-class service," and that it "shall not change motive power from present (1905) electric system without the consent of the city." New facilities are provided "usually at *insistence* of city." Italics by Ralph Picard, Commissioner of Public Utilities.

City Manager C. A. Harrell of Binghamton, N. Y., says: "Local transportation facilities in New York State are very minutely controlled by the Public Service Commission. The city can appeal to the Commission if transportation service is not satisfactory."

Rochester, on the other hand, does not even mention the Public Service Commission. For more than fifteen years this city has had an agreement with the New York State Railways, under which, says City Manager Harold W. Baker, "the city has control, through its Commissioner of Railways, over service, and fares are automatically regulated according to the terms of the contract. Our contract provides that a fixed sum be set aside each year and spent only for replacement and renewal of tracks and equipment. The schedules of all cars and buses are approved by and under control of the Commissioner of Railways."

A majority of the cities answering this question express full confidence in their power to improve local transportation where this is needed, and to keep the service up to scratch. This power emanates not only from franchise and contract, but from willingness to cooperate with the company, and knowledge of how to do it. A willingness to cooperate sometimes engenders a similar spirit in the other party; in fact, in this age, it would be interesting to learn of a case where the friendly advances of a city government were turned down by a transit management. At St. Joseph, Mo., for example, the street-railway company is improving both schedules and vehicles on mere petitions of patrons—and the city is giving new franchises.



INDICATIVE OF PUBLIC INTEREST IN GOOD LOCAL TRANSPORTATION—CROWDS AROUND THE P.C.C. MODERN TROLLEY CARS WITH WHICH MADISON STREET, CHICAGO, IS BEING FULLY EQUIPPED

. . . A BIG TANK FOR A BIG TOWN!

Buffalo, N. Y., Modernizes Water Supply System with Elevated Storage

BUFFALO, N. Y., is a big city,* but not so big that it could not benefit from the use of large capacity elevated water storage facilities. This fact has been strikingly in evidence ever since the tank shown above was placed in service. Located in the eastern section of the city, this tank is the first of three 2,000,000-gal. units which now give Buffalo's population a uniformly satisfactory water supply. All three tanks are of the Horton radial-cone bottom design. This design permits great volume with small variation in head. The range is only 25 feet between the upper and lower water levels. The height of the three tanks is slightly different to place them all in the same hydraulic plane. For information, address our nearest office.

** Population of 573,070 gave Buffalo the rank of twelfth city in U. S. in 1930.*

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Detroit . . . . . 1501 Lafayette Bldg.	Dallas . . . . . 1406 Dallas Athletic Club Bldg.	Los Angeles . . . . . 1403 Wm. Fox Bldg.

Fabricating plants in CHICAGO, BIRMINGHAM, and GREENVILLE, PA.

Water-Supply Problems—Typhoid Fever

The Unsolved Problems of Water Supply

GRATIFYING as has been the progress in water supply in the last quarter-century, there are still many problems to solve. To mention just a few:

Further safeguards are needed for watershed protection.

Difficult waters demand new processes.

We must learn how to handle certain industrial wastes.

Are there elements or substances in our water supplies, perhaps toxic, detrimental to public health, of which we have little definite knowledge?

What practical methods are we going to use with regard to cross-connections?

What policy is to be followed as to water supplies in factories and hotels which, of themselves, are equivalent to those of fair-sized towns?

How can we improve the quality of operating personnel? Is licensing of operators the answer to this question?

What can be done in the matter of better keeping of records so that we have comparable results instead of masses of information, valuable but not readily analyzed?

These and many other things are confronting the water-works profession today, in all of which the health authorities have a definite interest. Consequently, none of us need think that the problems of public water supply are by any means all satisfactorily solved. There is not only a task to accomplish, but there is a challenge as well to everyone interested in the production and service of this commodity which, next to air, is the most common one we have and at the same time the most needed. We have a goodly heritage handed down to us by our predecessors in this field, and I am certain, from observations extending over more than a quarter of a century, that the water-works fraternity will attack these problems with the same zeal and fidelity that has characterized our profession in the past year.

—From a paper presented by HOWARD E. MOSES, Assistant Chief Engineer, Pennsylvania Division of Health, before the Central States Section, American Water Works Association.

Fire Hydrant Repairs in Oak Park, Ill.

NO new hydrants were installed in the Oak Park, Ill., distribution system during 1935. A total of 152 hydrants were repaired at a cost of $1,278 for labor, and $114.79 for material. The nine hydrants which were broken and replaced cost the village of Oak Park $209.60 for labor and $435.35 for material. All hydrants in the system were tested, at a cost of $624.00 for labor. Painting of the hydrants during 1935 cost $468 for labor and $80.69 for material. Keeping the hydrants clear during the winter cost $117.60 for shoveling snow. A total of 22 hydrants were moved because of street widening at a cost of $1,051.20 for labor and $555.05 for material. The total cost of fire hydrant maintenance during the year was $4,934.28.

Planning Additions to a Distribution System

ACCORDING to F. M. Veatch, consulting engineer, Kansas City, Kans., in his paper, "Planning Additions to the Distribution System," presented before the Southwest Section, American Water Works Association, the data commonly needed for planning distribution system additions are roughly:

1. *A number of base maps*, drawn to a convenient scale and showing the distribution system with its pumping stations, elevated storage structures, valves, hydrants and mains indicated thereon by some convenient system of notation.

2. *An accurate topographical map* drawn on one of the base maps to show the elevation of the property served and of the various parts of the distribution system.

3. *A spot map* made by plotting the buildings of various types on the base map, to show the character of development in various parts of the city. Zoning plans are of assistance in this work, but usually a field canvass is required. Such a map is of great benefit when it is necessary to divide the city into districts classified by water usage or demand, and offers a convenient means of showing proposed or probable development in outlying sections.

4. *One or more pressure contour maps* formed by plotting observed pressures in various parts of the city under various operating conditions. Such a map will usually indicate the weak points in the system, and is quite valuable for purposes other than of main extensions.

5. *Consumption Studies.*—Naturally a more or less complete record of total water consumption is kept by the majority of water departments, but a surprisingly small number of them go more deeply into the matter by attempting to divide the total pumpage into its various use classifications, which include domestic and commercial, unaccounted-for water, etc. However, if additions to the system are really to be rationally designed, it is necessary to go farther than this and analyze the consumption in each of a number of sections of the system. After the normal consumption is determined by actual measurement by pitometer or otherwise, or estimated from an analysis of meter records, the fire demand in each section of the city, as required by the underwriters, must be determined from the district population and class of development as shown on the spot map mentioned above. The results of this study may conveniently be indicated on a map which shows the distribution system, and quite often it is possible to locate weak points in the system by inspection, particularly when comparison is made with pressure contours.

6. *Inventories and Valuations.*—The value of the existing system must be known if the economics of serving new customers is to be determined with any reasonable degree of accuracy. This is particularly true of large consumers, so located that a considerable investment in supply mains is involved. To serve such a consumer in small or medium-sized cities may cause serious complication in the existing system unless special provision is made to supply the demand, and since this may involve supply and storage as well as mains, the importance of the economic phase of the problem is quite evident.

These data which must, of course, be in the form of estimates as far as undeveloped territory is concerned, plus common sense and some hydraulic tables, about cover the field of distribution system extension as far as adequate capacity is concerned.

Typhoid Fever Reduction in Pennsylvania

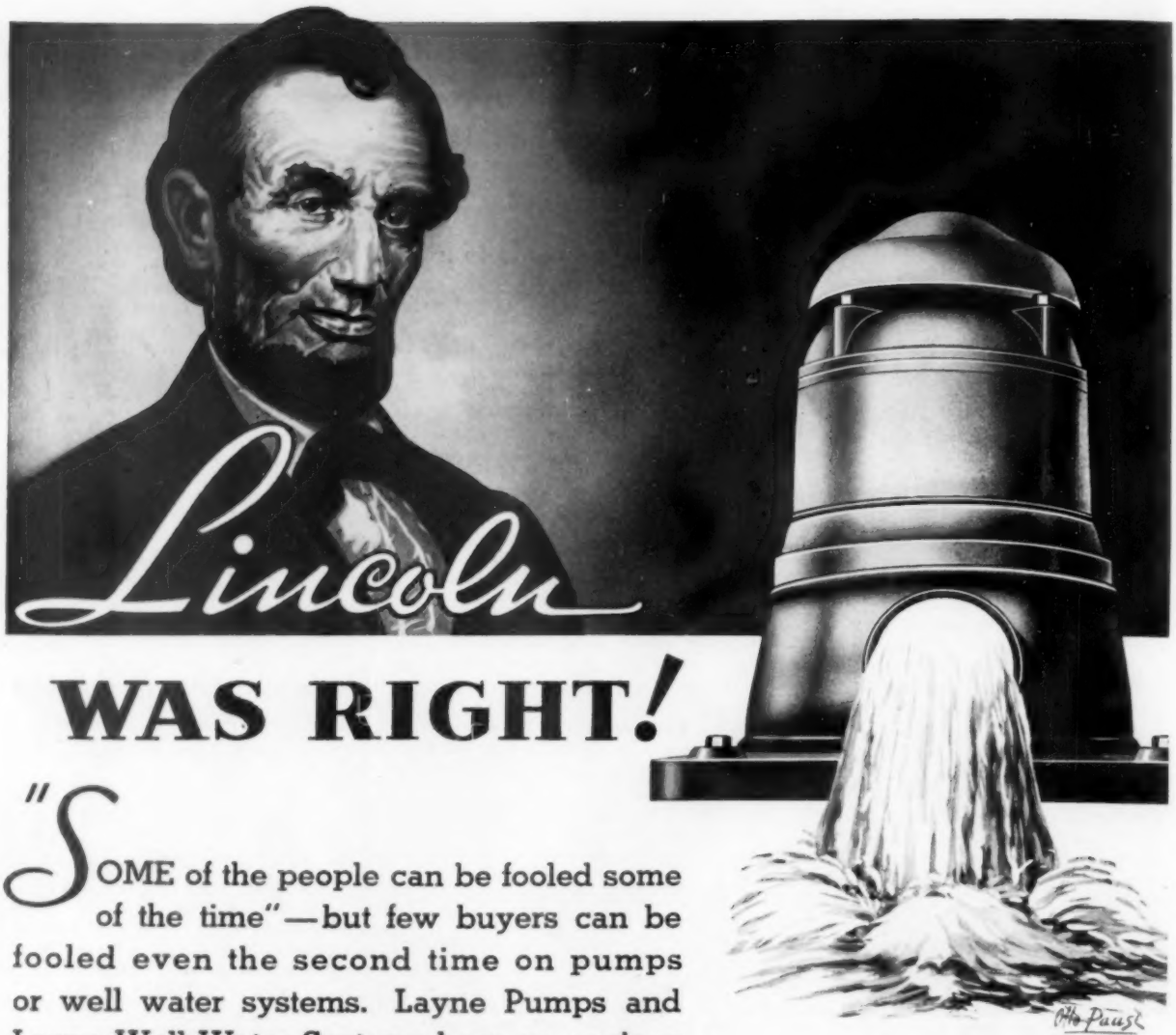
IN 1905 the Pennsylvania Department of Health was created by Act of Assembly, and it effected an organization in 1906. In that year there were 24,471 cases of typhoid fever, with 3,917 deaths, a mortality rate of 54.8 per 100,000 population. In 1934, there were 970 cases with 125 deaths, equivalent to a rate of 1.3 per 100,000 population. This is a reduction of approximately 97 per cent and represents a saving of over 100,000 lives of persons who would have died had the 1906 rate continued. This same trend has occurred throughout the entire country.

Howard E. Moses, Assistant Chief Engineer, Pennsylvania Department of Health, in speaking before the Central States Section of the American Water Works Association stated:

"Water-works men are modest fellows and do not 'claim everything and admit nothing,' but beyond question of doubt safer water supplies can be credited with being the most potent factor in this remarkable reduction. Other measures, such as milk control, hospitalization, immunization and better education of the public in sanitary habits, undoubtedly have contributed, but it is more than a coincidence that extension of safe water supplies almost invariably parallels a reduced typhoid incidence."

First Water Treatment

HISTORY tells us that the first treatment of a public water supply took place in the ancient city of Jericho in 850 B.C. An illness now probably known as Malta fever existed in Jericho and, following a conference of the wise men, it was decided that the public water supply was at fault and it was further decided to add salt to the water.



WAS RIGHT!

"SOME of the people can be fooled some of the time"—but few buyers can be fooled even the second time on pumps or well water systems. Layne Pumps and Layne Well Water Systems bear an envious reputation for quality and efficiency. Throughout the world the name Layne stands as the leader—the foremost—the one to whom all refer as the standard of comparison.

Municipal executives who will need more water during 1937 should call in one of our hydrological engineers. No obligation. For illustrated literature, write Layne & Bowler, Inc., Dept. B, Memphis, Tenn.

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LAYNE WELL WATER SYSTEMS

During February we hope you will remember to menion THE AMERICAN CITY

Sewage Treatment—Stream Pollution

Handling Supernatant Liquor When Digesters Kick Up

THE supernatant liquor from improperly operating sludge digestion tanks is frequently the cause of aeration difficulties at activated sludge plants, according to *The Digester*, of the State Department of Public Health of Illinois. In most plants supernatant liquor is wasted back to the inlet of the primary settling tanks, to be passed through the treatment works with the regular sewage flow. The quality of supernatant liquor depends entirely upon the condition of the digester, the liquor being clear and comparatively low in suspended matter content when the digester is functioning properly. However, when the supernatant liquor is in poor condition, it should be disposed of temporarily on a sludge bed or into a lagoon if the plant piping permits.

If the plant laboratory facilities include equipment for the suspended solids determination, a questionable-appearing supernatant liquor should be checked, and if found to contain 3,000 ppm or more of suspended solids, it should be handled with care. If an operator does not have the equipment to make this test, he must learn by experience to tell when the supernatant liquor is bad. The danger signals are a black appearance with considerable suspended matter, a foul, sour odor, and a low pH, below 6.8. The addition of lime to a poor supernatant as it is returned is helpful, making sure that the pH is raised well above 7.0. Regardless of whether a supernatant liquor is good or bad, it should always be wasted at a slow, uniform rate so far as is possible.

Stream Pollution Problems in New Jersey

RECREATIONAL and other uses of the lower portion of the Raritan River in New Jersey have been greatly interfered with by the discharge of raw sewage into the river from the municipalities extending from the town of Raritan to the mouth of the river, according to Russell Van Nest Black, Director-Consultant, New Jersey State Planning Board. The upper portion of the drainage basin is used extensively as a summer recreation and vacation area.

Every day about 35,000,000 gallons of sewage and industrial wastes are being discharged into the Raritan. In general, the sewage from municipalities in the upper drainage basin is thoroughly treated before being discharged. Until recently, the portion of the river from Raritan to the mouth received about 20,000,000 gallons of sewage and trade waste which were untreated.

The discharge of this material caused objectionable conditions in portions of the river, particularly from the canal dam about two miles above New Brunswick, to Bound Brook, and also caused condemnation of shellfish areas in Raritan Bay. An effort to remedy these conditions was made by the State Department of Health about 1928, when it notified the various municipalities to construct adequate and suitable sewage-treatment plants for the purification of the wastes.

Actions were brought against the municipalities to obtain injunctions to prevent the continued pollution of the river. At this point the recent business depression caused uncertainty as to the further issuance of some municipal bonds, and consequently action was delayed for a few years by agreement of the litigants.

The following municipalities have already taken, or are now taking, proper steps to comply with the instructions of the State Department of Health: Perth Amboy, New Brunswick, Bound Brook, Somerville, Raritan, Sayreville, and South River.

At the present time, municipalities located on Raritan Bay in New Jersey have satisfactory sewage-treatment plants, or new plants are under construction. The towns of Raritan and Somerville on the main river have applied for government aid in the construction of suitable sewage-treatment plants. The city of Perth Amboy has recently constructed a sewage-treatment plant. A sewage plant is under construction at New Brunswick, and other smaller municipalities are making plans for the early completion of satisfactory sewage-treatment works. Return of the lower Raritan to its much-needed broader usefulness appears to be in sight.

Sewage Pumping Stations in Baton Rouge, La.

ALL sewage and storm water from Baton Rouge, the capital city of Louisiana, is handled at two sewage pumping stations. The South Boulevard sewage station is equipped with four 8-inch Fairbanks-Morse Wood sewage and trash pumps and has served the older section of the city for approximately twenty years.

The newer University Lake sewage pumping station is virtually in the shadow of the magnificent skyscraper state capitol. It was designed by L. J. Voorhies, consulting engineer, of Baton Rouge, and was erected in 1929. Since that time it has handled practically all the city's sewage and a large portion of the drainage. The station was equipped originally with two 10-inch F-M sewage and trash pumps driven by 40-hp vertical, ball-bearing motors, each unit with a capacity of 5,000 gpm against a total head of 15 feet.

Rapid growth of the city necessitated additional capacity, so that in 1931 a third unit was installed. This is a 14-inch F-M vertical sewage and trash pump driven by a 60-hp vertical ball-bearing motor, and has a capacity of 7,500 gpm. All these units operate automatically and require but little attention.

In addition to the two main pumping stations, the city has several underground steel tank booster stations, which serve outlying suburban developments. There is one 3-inch, 100-gpm F-M motor-driven, vertical pumping unit; while in a second booster station are two similar 4-inch units, each with a capacity of 300 gpm.

University Lake, located in the north section of the city, is kept down to a safe level during flood stages of the Mississippi River by a 36-inch F-M Wood horizontal screw pump with direct electric motor drive. This unit has a capacity of 28,000 gpm.

The Price Chicago Must Pay for Air-Conditioning

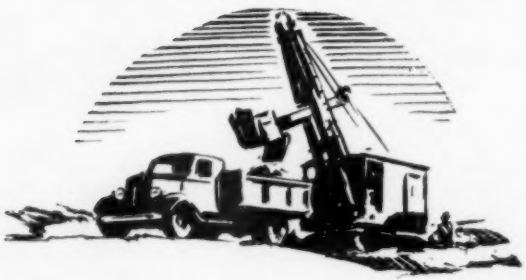
IT is estimated that it will cost downtown Chicago about $3,000,000 to renovate its sewers in order to take care of the increased demand of air-conditioning systems, according to a report in the *Illinois Municipal Review*. The enormous amounts of water used by the prevailing air-conditioning systems seems to be one of the chief sewer problems for congested areas.

It Pays to Advertise

THE dried sludge stockpile at the Champaign-Urbana, Ill., sewage-treatment plant was getting a bit too large, so G. H. Radebaugh, Manager, wondered how he could get more folks to come after the sludge. The next morning the local paper carried a picture of a farmer hauling a load of sludge from the plant, with a brief statement of the number of tons thta had been taken in previous years. This solved the problem, for local farmers flocked in to haul loads away.

THIS PICTURE IN THE LOCAL NEWSPAPER BROUGHT IN BUSINESS TO THE SLUDGE SALES DEPARTMENT, CHAMPAIGN-URBANA, ILLINOIS

3 GREAT TIRES FOR DUMP TRUCKS!



Let your work decide your tread.

Any one of these three Goodyear Truck Tires will give you the long, trouble-free service for which Goodyears are famous wherever dump trucks work. Each one has a body of patented Pre-Shrunk Supertwist Cord . . . chemically-toughened rubber . . . blowout protection in *every* ply.

For ordinary all-around dump truck service—where you don't know just what the jobs ahead may be, and if you use high pressure tires — pick the All-Weather Dump Truck Tire (1).

If you're banging over loose rocks, plowing through sharp stone—jobs where cutting and jagging and tread-ripping ruin you—pick the Pneumatic Lug Tire (2).

If you're in sand or sloppy going most of the time—where slipping and spinning and lost traction are costing you money—put on the Sure-Grip (3).

Tell your Goodyear dealer what your dump trucks do, where they work. He'll show you the ace Money Saver.

THE GOODYEAR TIRE & RUBBER COMPANY, INC., AKRON, OHIO

GOODYEAR

TIRES FOR DUMP TRUCKS

Streets — Photography — Engineering

New Roadway for 33-Year-Old Bridge

LAST December a new $400,000 roadway was opened on the 33-year-old Williamsburg Bridge between the boroughs of Manhattan and Brooklyn, N. Y. The improvement now makes six lanes available for traffic, and it is believed that the additional facilties will greatly relieve the severe traffic congestion which has existed on this bridge for some time, for vehicles from the downtown sections of New York City being driven to destination points on the other side of the East River may cross from the Delancey Street entrance.

Another source of relief from the increased tide of travel in Brooklyn and Manhattan will be the connection offered with the Holland Tunnel route.

Since the Williamsburg Bridge was opened on December 19, 1903, it has been noted for its use by heavy-type vehicles. As it gives egress at both terminals to business sections, there always has been a great volume of merchandise haulage over the structure. Early in its history the span was crowded from dawn until late at night with horse-drawn drays, which were replaced eventually by motor carriers. Agitation for the removal of excess trolley tracks was begun almost a decade ago, according to Bert Pearce, Automobile Editor, *The Herald Tribune*. Just before the recent economic blight, plans were being considered for scrapping the rails, but these plans were laid aside as the city purse strings were tightened by decreased revenues. Revival of interest in the proposed improvement has brought about action which will add much to the service rendered by the $15,091,497 structure, which now accommodates 48,000 vehicles a day.

Photography Has Place in Works Department

IN discussing the organization of the Department of Works, Toronto, at the 1936 Public Works Congress, Commissioner R. C. Harris spoke of the photography and blueprinting section of his Department. A photographer is in charge of this section, which supplies the needs of civic departments and, to some extent, those of public utilities, for photographs, blueprints, etc.

The photographic work consists of recording progress in construction of roadways, sewers, bridges, water works and other civic improvements; picture records of conditions prior to and during the accomplishment of street widening and extensions; production of graphic records to be used as evidence in claims, lawsuits, prosecutions, etc. Lantern slides and photostats are also made and blueprints of plans are produced as requisitioned.

This section is self-sustaining, and Commissioner Harris is convinced that, in addition thereto, it saves its annual cost many times over by reason of the convincing evidence it delineates.

Street Surfaces in Manila, P. I.

THE various types of surfacing for city streets in Manila, Philippine Islands, as of December 31, 1935, are as follows: earth, sand-clay, gravel, etc., 2,160 linear feet; waterbound macadam, 83,300 linear feet; block-stone, wood, asphalt and brick, 49,800 square yards; improved earth and surface, 4,870 square yards; asphalt surface treatment, 8,000 linear feet; asphalt armor coat, 6,520 linear feet; bituminous asphalt macadam, 19,750 linear feet.

Streets of Peastone and Tar Stand Up

WE HAVE found by experience that, owing to good drainage of the sandy soil in the vicinity of Swanton Village, Vt., we can build a lasting surface with peastone and tar. For the side streets, about 1 inch of peastone is spread and lightly rolled, and then shot with ½-gallon of tar and a light peastone cover spread on it. This is allowed to set up and then is given a zephyr shot of tar. A broom drag used just before the zephyr coat of tar, will provide a smoother surface.

All our streets are done this way except the main street, U. S. 7, of cement with 7-foot macadam shoulders, and some others which were built of a 6-inch course of quarry-run lime chips for a base. These were tarred and covered with gravel.

We have some 1-inch peastone surfaced streets which have not been treated for three years, and they are apparently as good as when built.

L. E. JORDAN,
Village Superintendent.

Good Roads Show Cactus to Surprise Public

"IS southern New Jersey turning into a great American desert?" is a query frequently addressed to Forest Supervisor James P. Allen, of the New Jersey State Department of Conservation and Development. Visitors to the Lebanon State Forest in Burlington and Ocean Counties have recently noticed cactus growing in profusion. This cactus, commonly called, "prickly pear" and scientifically known as "Opuntia vulgaris," lies prostrate on the ground in large patches. It is a light-green color and covered with greenish-yellow, barbed bristles and solitary spines which make it difficult to handle. From about early June to early July it bears beautiful pale-yellow flowers.

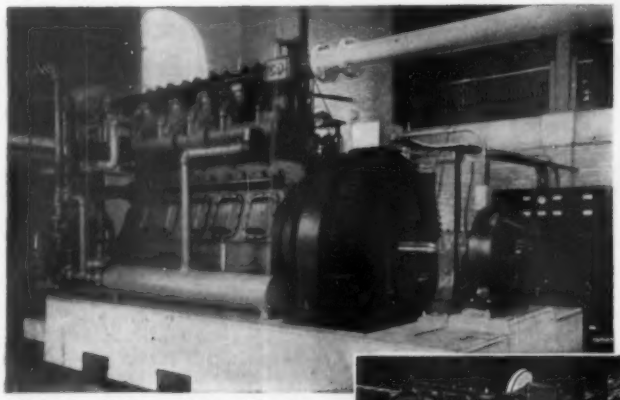
Mr. Allen says that Opuntia vulgaris is no novelty to him, for he has seen it growing in Lebanon State Forest for years. The sudden interest that it has aroused in New Jersey is because of the new system of good gravel roads constructed through the forest to open up remote sections for more efficient forest fire protection, which has permitted the public greater access to the forest and has enabled them better to observe the flora and vegetation.

Photograph by courtesy of Newark Evening News

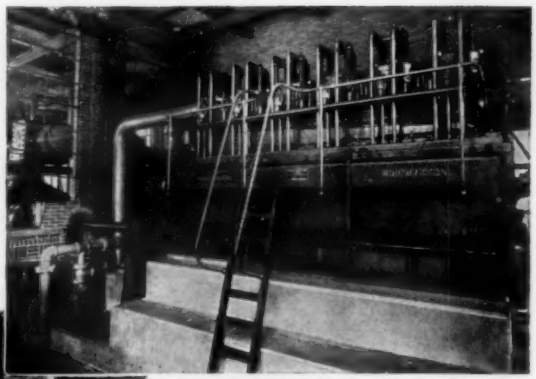
SAFETY FIRST, EVEN WITH STEAM ROLLERS!

When the gears of "Mary Ann," the ancient and honorable steam roller owned by Nutley, N. J., were mysteriously released one night in December, the ponderous machine rolled down hill and crashed into a retaining wall that was an innocent bystander. If road rollers must be parked on the streets at night, leave them on level ground, and also lock the gears so that meddlesome boys of all ages cannot unleash the massive machines

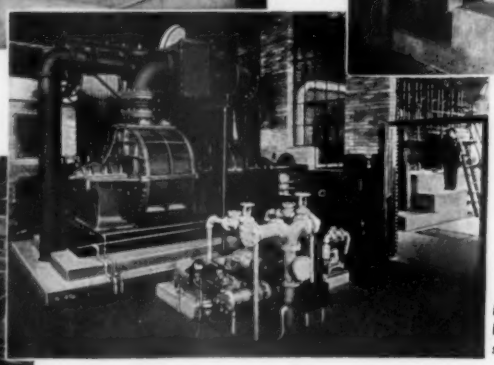
PEORIA CUTS POWER COSTS
in its Sewage Disposal Plant
with WORTHINGTON GAS ENGINES



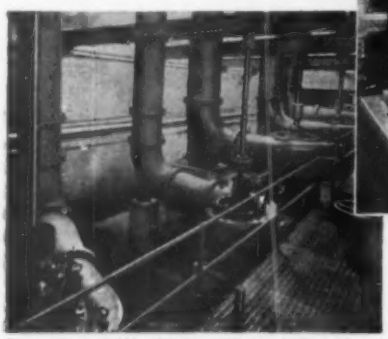
300-hp. Gas Engine . . . General Electric Generator Unit. Supplies power for all motor-driven equipment in the sewage plant.



535-hp. Gas Engine direct-connected to Roots-Connersville Blower. This unit is used to aerate sludge.



Blower Room . . . Roots-Connersville Blower. The driving engine can be seen in adjoining room.



Five of nine Worthington Vertical Centrifugal Sewage Pumps installed here. There are 4-16", 2-20", 2-30" and 1-36" pumps for capacities of 4500, 9700, 15,300 and 23,000 g.p.m. . . . a total installed capacity of 91,000 g.p.m.

GAS ENGINES
30 to 1800 hp.
•
DIESEL ENGINES
25 to 1500 hp.
•
COMPLETE PUMPING EQUIPMENT OF ALL TYPES
•
CONDENSERS AND ALL AUXILIARIES
•
AIR AND GAS COMPRESSORS
•
Bulletins Available

TO convert hitherto wasted sewage gas into power, this forward-looking municipality selected Worthington Gas Engines. With the Worthington Centrifugal Main Sewage Disposal Pumps in service since 1930, with a Worthington Air Compressor for engine starting and Centrifugal Pumps for engine jacket cooling . . . this outstanding plant is essentially Worthington equipped . . . a complete service with undivided responsibility.

MAINTAINED economies and trouble-free operation in this and other important installations have earned this confidence in Worthington equipment and the organization which produced it.

WORTHINGTON PUMP AND MACHINERY CORPORATION

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WORTHINGTON

ATLANTA BOSTON BUFFALO CHICAGO CINCINNATI CLEVELAND DALLAS DENVER DETROIT EL PASO HOUSTON KANSAS CITY LOS ANGELES NEW ORLEANS NEW YORK PHILADELPHIA PITTSBURGH ST. LOUIS ST. PAUL SAN FRANCISCO SEATTLE TULSA WASHINGTON

A-32651B

Public Safety

Toledo Likes Its Parking Meters

Less Congestion

PARKING meters are meeting our expectations. I think the general reaction of drivers and merchants is a favorable one as attested by letters received by the Safety Department, and by editorial expressions. Apparently, a few citizens consider the meters an impairment of their personal rights, but many have expressed satisfaction at the ease with which parking space can now be found in the downtown section. This naturally has resulted in the elimination of double parking, and traffic is moving through the congested area with greater speed.

Time surveys made by the Community Traction Co., just prior to the installation of the meters and again after they were placed in operation show that there is a 9 per cent decrease in running time for their buses.

Toledo now has about 850 meters in operation. Revenue has been averaging about 38 cents per meter per day.

JOHN H. EDY,
City Manager, Toledo, Ohio.

Income a Factor

CITY TREASURER WELT reports $13,638 collected from the parking meters in the 45 days since they were installed, on November 16, to and including December 31. By simple arithmetic it is seen that on a basis of 365 days these sources of revenue will bring better than $100,000.

In face of that kind of money, it is going to be easy to dismiss the few complaints still heard that the parking meter is a nuisance and incompatible with the rights of the motoring public in the streets.

All reports indicate the motoring public has taken favorably to the parking meters. A nickel an hour is small enough to pay for the convenience of finding a parking space nearer than ever before to where one wishes to go.

Nobody is going to scold off a $100,000 of this hitherto untapped source of revenue from now on.

—*Toledo News-Bee.*

Bus Schedules Speeded Up

PRIOR to the installation of the Toledo meters, there was evidence of great laxity in the enforcement of the "No Double-Parking" ordinance. Movement of buses through the business area was hampered. Following the installation of meters, the effect on the movement of traffic was at once noticeable. A careful check of our lines showed that the running time through the downtown loop was decreased 5.1 to 9 per cent.

We have been surprsed at the ready acceptance the public has given the parking meter. Rigid enforcement under the meter plan is a radical change, yet almost no complaints have been heard. The reason, in our opinion, is that the advantages of the meter system are so outstanding that they outweigh any disadvantage in Cambridge to the individual motorist.

P. J. O'NEILL, JR.,
Railway Engineer, The Community Traction Co., Toledo, Ohio.

Secret Contact by Patrol Box

WE are installing a new switchboard and fifteen outside police signal boxes. I am a firm believer that this form of departmental communication has a very real and continuing place in the police system, because in cases of serious trouble it enables headquarters to move the patrolmen quickly, keeps the men more alert, and enables us to render better service. It also allows closer contact with headquarters and the officers on patrol, as officers in cruising cars. In my opinion this sort of system, which deals with the foot patrolmen, is a form of communication which we could not be without. However, I am strongly in favor of two-way radio sets for the cruising cars. These two units working in conjunction with each other brings the modern police department up to a standard of efficiency.

THOMAS I. CROWLEY,
Chief of Police, Bangor, Maine.

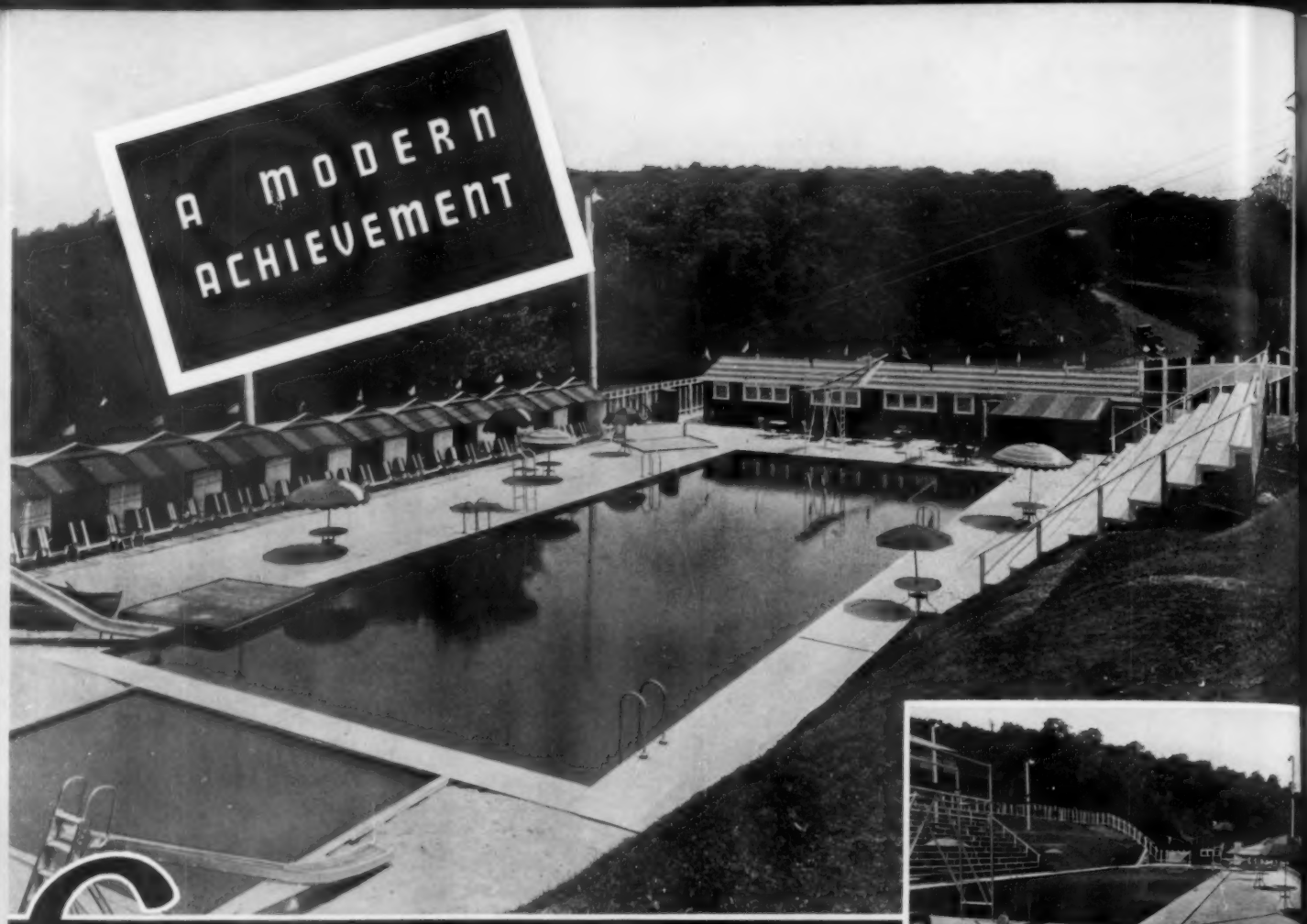
Cambridge Is Up to Date on Police Radio and on Fire Alarm

OUR ultra-high-frequency police radio system, recently installed by The Gamewell Co., includes a 50-watt central-station transmitter, seven complete car equipments for reception and transmission of signals, a receiving antenna mounted on a guyed tubular steel mast 130 feet high located on the roof of the fire headquarters building about a mile from the police headquarters, where the transmitter and loudspeaker are installed. The transmitting antenna is mounted on a 50-foot wooden pole on the roof of the police headquarters building. Two ultra-high frequencies are used, thus providing complete duplex radio telephony.

We feel that the city of Cambridge is equipped with the most modern, complete, and efficient systems of municipal communication and signaling that are available.

The new police signal board, added last year, has enlarged and modernized this system with the latest type equipment. Another improvement is the installation of the new fire-alarm office equipment two years ago, which includes Gamewell threefold features for protection against loss of alarms from broken or grounded or otherwise disordered circuits. We have not yet replaced all our old boxes with threefold boxes, but will do so as our appropriations are available. Both the police-signal and the fire-alarm systems in Cambridge are operating very satisfactorily.

TIMOTHY C. O'HEARN,
City Electrician, Cambridge, Mass.



THE PITTSBURGH-DES MOINES *Steel* SWIMMING POOL

A PERFECT pool must be 100% watertight. It must retain its bathing water, and exclude unsanitary ground water. A Pittsburgh-Des Moines Steel Pool is "drop-tight" when built and it remains so.

The first cost of a steel pool is lower than of a pool properly constructed of other materials. It will outlast other types. The dense elastic qualities of steel enable it to withstand frost action and movement of subsoil and surrounding earth without cracking or spalling. An occasional coat of paint, on its interior surfaces, the only maintenance necessary, will keep it new looking season after season.

Guests enjoy their hours of recreation in the clear sparkling water of a clean, smooth, safe, steel pool.

Our Bulletin No. 402 describes these Steel Swimming Pools. Write our nearest office for a copy.

The accompanying photographs show the Steel Pool at the Summit Hotel, near Uniontown, Pennsylvania. Pittsburgh-Des Moines built the pool complete, including filters, pumps, chlorinator, piping, bathhouse, walks, beaches, floodlights, excavation, grading, etc.

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1216 First National Bank Building, Chicago
1217 Praetorian Building, Dallas
619 Rialto Building, San Francisco

Health and Sanitation

Health Department Budgets Rising Out of Their Depression

ACCORDING to the Michigan Department of Health, there seems to be some real indication that municipal health department budgets are rising from their depression low. Detroit, for example, spent 116.4 cents per capita in 1930, dropped to a low of 76.8 cents in 1933, and rose to 94.8 cents in 1935. Grand Rapids, however, dropped from an expenditure of 68.6 in 1930 to 58.6 in 1935. Also on the sad side of the ledger is Flint, with a health expenditure of 96.6 cents per capita in 1930 compared with only 54.5 cents in 1935.

Among 79 cities reporting for a five-year period in the Annual City Health Conservation Contest, the average per capita expenditure for health activities in 1930 was 86.5 cents; in 1931 it was 90.1 cents; in 1932, however, it dropped to 82.9 cents; while in 1933 it dropped still further, to 73.3 cents; but in 1934 average expenditures per capita rose to 76.6 cents.

Regulations for Cleaning Utensils at Public Eating Places

THE importance of proper sanitation in public eating and drinking places is important in the control of communicable diseases. The intensive drive to secure improved conditions in Hartford, Conn., is an indication of progress that can well be duplicated elsewhere.

Regulation 123(f) of the Sanitary Code of the state of Connecticut, applying to sanitation of public eating and drinking places, provides that:

"Single service cups, dishes, spoons and drinking straws shall be protected from flies and dust. All glasses, cups, knives, forks, spoons, or dishes that are subjected to repeated use shall be thoroughly washed after each use by cleansing with hot water and soap and then rinsing in clean, hot water, or by other process approved by the local health officer."

The Hartford, Conn., Board of Health has recently enacted a regulation which is in accord with the above state regulation and further prescribes in detail the method of cleansing classes, dishes, silverware and other utensils that must be used in public eating and drinking places in Hartford:

"(a) All glasses, dishes, silverware, and other utensils used at places dispensing food or drinks shall be washed after each service until clean to the sight and touch in warm water (110 degrees F.-120 degrees F.), containing soap or alkali cleanser.

"(b) After cleansing, all glasses, dishes, silverware, and other utensils shall be placed in wire cages and subjected by immersion for at least 5 minutes to the bactericidal action of water heated to a minimum of 170 degrees F.

"(c) Upon removal from the hot water, glasses, dishes, silverware, and other utensils shall be stored in such a manner as not to become contaminated before being used.

(d) Other equally effective methods of bactericidal action by heat, hot water, or steam will be approved.

"(e) When paper receptacles, ice cream cones or other single service utensils are used for serving food or drinks, they must be kept in a sanitary manner, protected from dust, flies and other contamination."

In support of the need for proper cleansing of eating and drinking utensils, the Hartford Board of Health issued the following public statement:

"Examinations made of drinking glasses in the Board of Health laboratory, from places dispensing food and drinks in Hartford, show that they are frequently contaminated with germs from the nose, throat and gastro-intestinal tract. These results indicate that the requirements of our present local regulation are inadequate to protect the public from dangerous disease germs, and do not insure proper sterilization of glasses, dishes, and other utensils."

A Healthy Body Leads on to a Healthy Mind

AT a conference on health education held under the auspices of the Connecticut State Department of Education recently, C.-E. A. Winslow, D.P.H., Professor of Public Health at the Yale School of Medicine, made the following pertinent comments:

"The problems of the future do not lie in the mortality rate of various diseases, but in unemployment, leisure, social security and housing. We must be tolerant and not intolerant with our neighbor, family, and those with whom we work as well as our daily contacts. We must realize their conduct and attitude may be caused from a mental ailment rather than a physical ailment.

"Health is not freedom from disease; it involves personal well-being and wholesome living. Cultivation of a healthy body leads on to a healthy mind."

The Danger of Back Siphonage

THE Joint Committee on Health Problems in Education, of the National Education Association and the American Medical Association, has reported the prevalence of a possible health hazard in many apparently modern school buildings caused by the danger of back siphonage and contamination of water-supply mains.

In view of this situation, the Committee "recommends to all school boards and school executives that surveys be instituted by competent engineers to ascertain whether or not the danger of back siphonage and consequent pollution of water-supply mains exists in plumbing installations within their jurisdictions, and that such surveys be followed by prompt corrective measures."

Why confine back siphonage surveys to school buildings? We wish to protect the youth of our cities, but we must also consider our homes and the strangers within our gates who are stopping overnight or for a longer period in our hotels. Such surveys should start with educational articles prepared by sanitary engineers and published in local newspapers. The cooperation of plumbers should be sought, since necessary changes in plumbing systems naturally redound to their financial benefit as well as to the benefit of the community as a whole through the elimination of a potential health hazard.

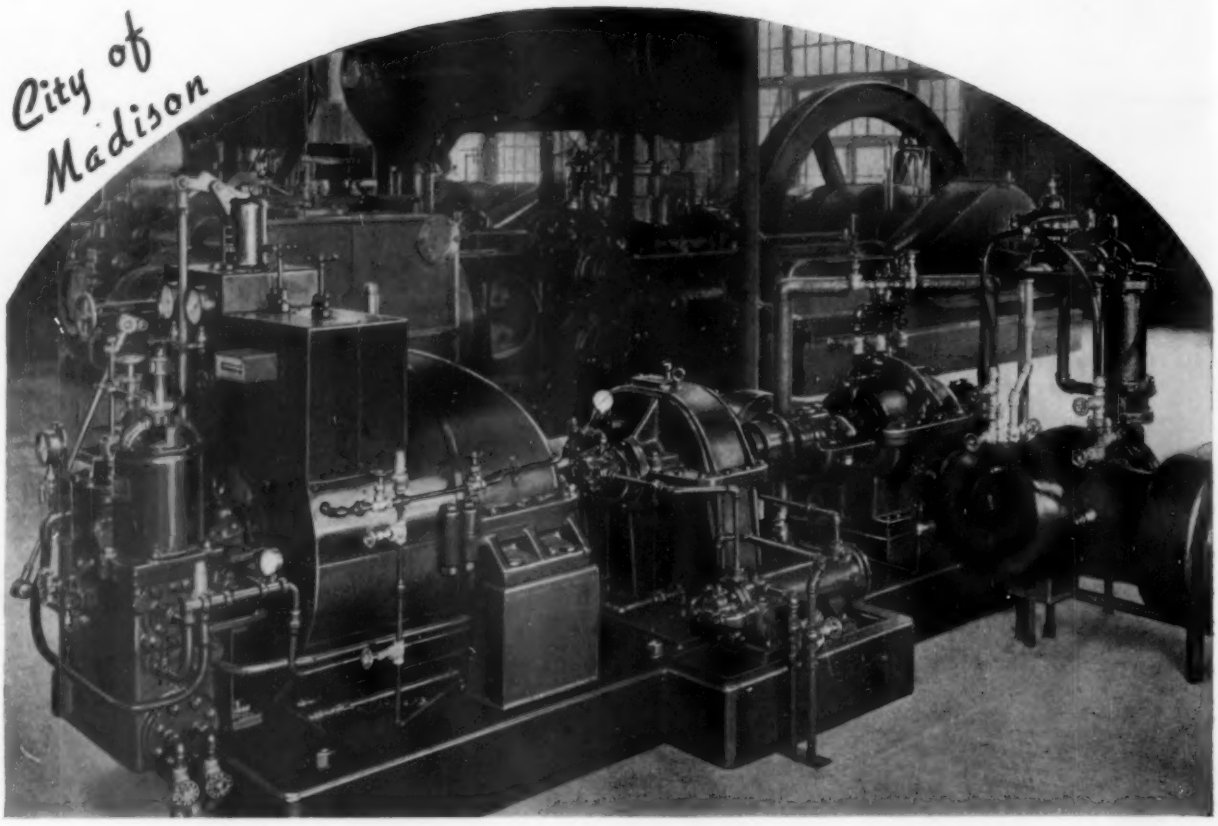
Typhoid from a Carrier Living in Another State

AN interesting report in the October issue of the *Connecticut Health Bulletin* shows the need for the cooperation of local health officers with the State Department of Health in running down typhoid cases and their causes. In Connecticut a patient had typhoid fever, with the onset late in July. The case was diagnosed and reported in August. When investigating the case with reference to the possible source of infection, the local health officer found that the patient had visited a grandmother in New Jersey and other relatives in Pennsylvania in July prior to the onset of illness.

In accordance with the cooperative arrangement between the states for interstate notification of disease, the facts in the matter as ascertained were reported to the State Health Departments of New Jersey and Pennsylvania. Both departments investigated families where the patient had visited, and no evidence of typhoid was found in the Pennsylvania family.

The New Jersey State Department of Health, however, reported that a specimen submitted to their laboratory from the grandmother of the Connecticut patient showed the presence of typhoid bacilli. This indicates that the grandmother is a carrier. She gives a history of having had typhoid fever some twenty or thirty years ago. It is presumed that she has been a carrier ever since she had the attack of this disease. From two to five per cent of all persons who have typhoid fever are said to remain carriers indefinitely, perhaps for the rest of their lives.

More recently the New York State Department of Health has found a typhoid carrier responsible for another Connecticut case of typhoid fever. In this instance the carrier, who is an elderly lady, moved into the patient's family early in June, 1936, and prepared food for the family on several occasions. She is said to have had typhoid fever a number of years ago. The patient came down with typhoid on August 2d, and by the time the investigation was made, the carrier had gone to New York State. Information was sent to the New York State Department of Health as to the suspicious circumstances in the case, and their investigations resulted in finding her to be a typhoid carrier.



How Old are Your Pumps?

AVERAGE efficiencies for centrifugal pumps have increased from 10 to 15% since 1914 and 5 to 8% since 1924 due to higher speeds and better hydraulic design. For this reason many cities are saving money by scrapping old units and replacing them with modern high-efficiency types. The economy usually attributed to units four or five times as large, only a few years ago, was realized on the acceptance test of the moderate size, geared, steam turbine driven, Allis-Chalmers centrifugal pumping unit installed in the City of Madison, Wis., in 1936.

This unit, although rated less than five million gallons per day and operated by a condensing steam turbine with approximately 150 lbs. steam pressure and no superheat, delivers over 3000 gallons of water per minute against 210 feet head and uses less than 3000 lbs. of steam an hour which is exceptionally good performance for a unit of this size. It is another example of Allis-Chalmers "Undivided Responsibility", pump, turbine and condenser built by one company.

Allis-Chalmers is the only company building complete pumping units, consisting of the centrifugal pump and any type of drive—*and that means there is no divided responsibility . . . there is no lack of coordination between pump and drive.*

736

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Blowers, Compressors and Vacuum Pumps.
Cement Making Machinery, Rock Crushers, Screens, Roadbuilding Equipment.
Centrifugal Pumps.
Electric Generators, Transformers, Converters, Rectifiers, Switchgear and Regulators.
Electric Motors for all purposes.
Farm Machinery, Road Machinery, Farm and Industrial Tractors.
Flour, Feed and Flaking Mill Machinery.
Hydraulic Turbines and Accessories.
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FEBRUARY, 1937

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The American City

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Airport Development Planned in Massachusetts

Committee for Aeronautics Furthers Municipal Airports and Creation of Flight Strips

WITH the possibility that Boston may become a port of entry for trans-Atlantic planes, because of its advantageous geographical location, consideration has been given to the early development of the Governors Island airport through the signing of a fifty-year lease between the War Department and the city of Boston for the use of Governors Island as a part of the Boston Airport.

The passage of uniform laws by all the New England states is urged in the report of the Committee for Aeronautics released on January 18, 1937. As flying is seldom an intra-state affair, laws that will be similar are essential. Another major effort by the Committee has been the furtherance of airport projects for Hyannis, Westfield, Hingham, Falmouth, Plymouth, Newburyport, Pittsfield, Marshfield, Beverly, Turners Falls, North Adams, Springfield, Worcester, New Bedford and Brockton. Working in cooperation with the Bureau of Air Commerce, the Committee carried on its survey of the airport needs of Massachusetts cities and has had WPA funds of over $6,000,000 earmarked for the development or improvement of airports within the Commonwealth.

The Future of Airports

Rules and regulations relating to aircraft in Massachusetts promulgated by the Registrar of Motor Vehicles were approved by the Commissioner of Public Works on January 28, 1936, and took effect February 1, 1936. In the absence of legislation, such as is found in the Uniform Airports Act, the general field of municipal law must be looked to for the answer to any question regarding purchase, condemnation, etc., of land for the purpose of construction and maintenance of airports.

Public airports, and also commercial airports of certain classes when suitably located, adequately developed, and properly operated, not only are utilities of convenience and necessity to the general public, but in many cases are of direct value to the neighboring land. Conflicts of interest between the airport and its more immediate neighbors cannot, however, always be avoided, and it is therefore proper to consider the protection which the law may afford the airport in such cases, first studying the general principles of law involved and then taking up the specific measures based upon them.

Courts have held that eminent domain is the right of the Government to take and appropriate private property to public use whenever the exigency requires it. It is not necessary that the entire community, or any considerable portion of it, should participate in an improvement to constitute it a public use. The statutes are quite definite in regard to the taking of land for the building of highways. If it is necessary to acquire land for a state highway, the Department of Public Works in Massachusetts is empowered to take the land by eminent domain on behalf of the Commonwealth.

Landing Fields and Flight Strips

A landing strip (emergency field) as defined by the Uniform Aeronautical Code, which has been recently incorporated into Chapter 90 of the Massachusetts General Laws, is an area, either land or water, which is available for the landing and take-off of aircraft, having not less than 200 feet of usable width and 800 feet of usable length. Such a landing strip is a creation of the Aeronautical Code, whereas the "Flight Strip" is a new phase of highway development.

A Flight Strip is a flat area, 200 to 800 feet wide, more or less, and from 1,800 to 5,000 feet long, located adjacent to the highway on publicly owned land. These Flight Strips may be from 15 to 50 miles apart. The term Flight Strip should not be confused with the statutory definition of the landing strip, inasmuch as the Flight Strip is included within the highway right-of-way and is laid out and constructed by the same authority that is in charge of the highway. A Flight Strip is not only adjacent to a highway, but is a part of the highway right-of-way itself, which is

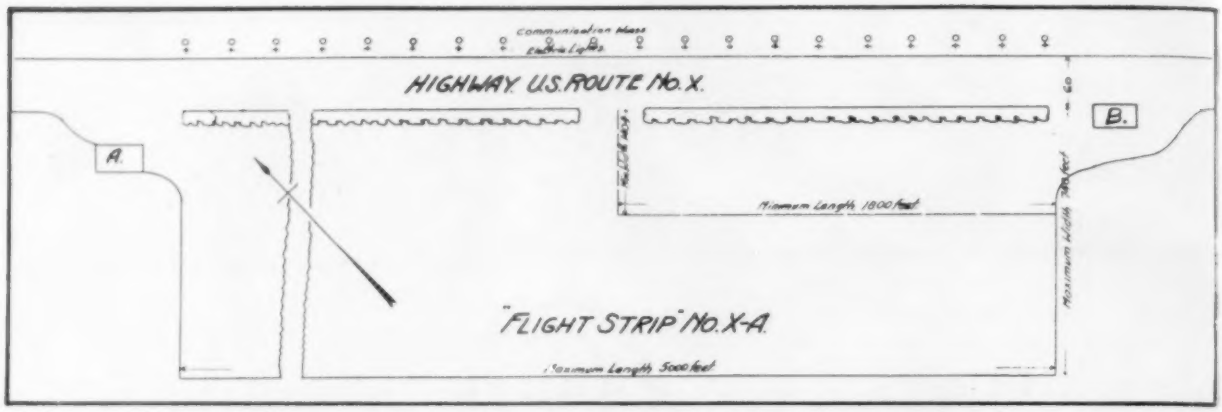


DIAGRAM OF A "FLIGHT STRIP," SHOWING ITS LOCATION ALONGSIDE A MAIN HIGHWAY

not necessarily the case of a landing strip.

The Department of Public Works in Massachusetts can only take land under existing law for highway purposes. If Flight Strips are to be made a part of the state highway program and this new phase of highway development placed in the Department of Public Works, it is believed that new legislation will probably be needed.

If any authority is to be set up to handle Flight Strips, they should be made a part of the highway development and placed under the jurisdiction of highway engineers, because the State Department of Public Works of Massachusetts, while working on the highways, can use its trained personnel and equipment to maintain and develop areas for Flight Strips adjacent to these highways. The law should also provide that, as the highway engineers are fully qualified to do highway work, their services may also be used by the State Department of Public Works on Flight Strips.

Although the law in Massachusetts already provides for emergency landing fields, no areas adjacent to highways have been developed which might serve as an example for the legal status of a Flight Strip. In other words, so-called landing strips have been developed and maintained without special legislation.

The Service of Flight Strips

As Flight Strips relate directly to road transportation, which automatically becomes the responsibility of the various state highway departments, any state laws relating to Flight Strips should be conceived as part of existing highway and motor-vehicle laws.

As Federal and state funds are used in the development of highways and will therefore also be used in the development of Flight Strips, these areas adjacent to highways would be available for trucks and other carriers used in the transportation of the United States mail. Air mail always must be transferred from the airplane to some carrier on the highway. The logical state department to furnish the link between the air and highway transportation is the Highway Department, and the Flight Strip can be the ground area where highway and air transportation meet. It is possible that several Flight Strips will be constructed in Massachusetts in the near future, which has led the Committee for Aeronautics to suggest a few slight changes in some sections of Chapter-90 laws, subject to the approval of the National Conference of Commissioners on Uniform State Laws.

Flight Strips on all arterial highways leading into a metropolitan area will make possible the concentration of airplanes at such times as events, peaceable or otherwise, occur in the area which call for the presence of these vehicles which furnish the fastest mode of transportation. Thus, Flight Strips will serve the city without causing undue congestion at the municipal airport itself; they will heighten its value and create greater facilities for air transport for every city within taxi flight distance. Private flying in the future will be greatly increased by the widespread construction of Flight Strips.

The Committee for Aeronautics of the Commonwealth of Massachusetts consists of General William I. Rose, The Adjutant General of The Massachusetts National Guard, Chairman; Stedman Shumway Hanks, Lieutenant-Colonel, United States Air Reserve, Technical Adviser, who originally conceived and planned for the development of Flight Strips in this country; William F. Callahan, Commissioner, State Department of Public Works; and Charles P. Howard, Chairman, Commission on Administration and Finance of the Commonwealth.

Motor-Vehicle Fatalities, 1936

A REPORT by the National Safety Council, released on January 29, estimates the fatalities from automobile traffic accidents in the United States in 1936 as 38,500, a distressing all-time record of 1,500 in excess of the previous high mark of 1935. Of this increase the Council said that 1,000 came in the last two months of 1936 when "open roads and fair weather permitted heavy traffic in the north half of the country where winter usually cuts the volume of highway travel."

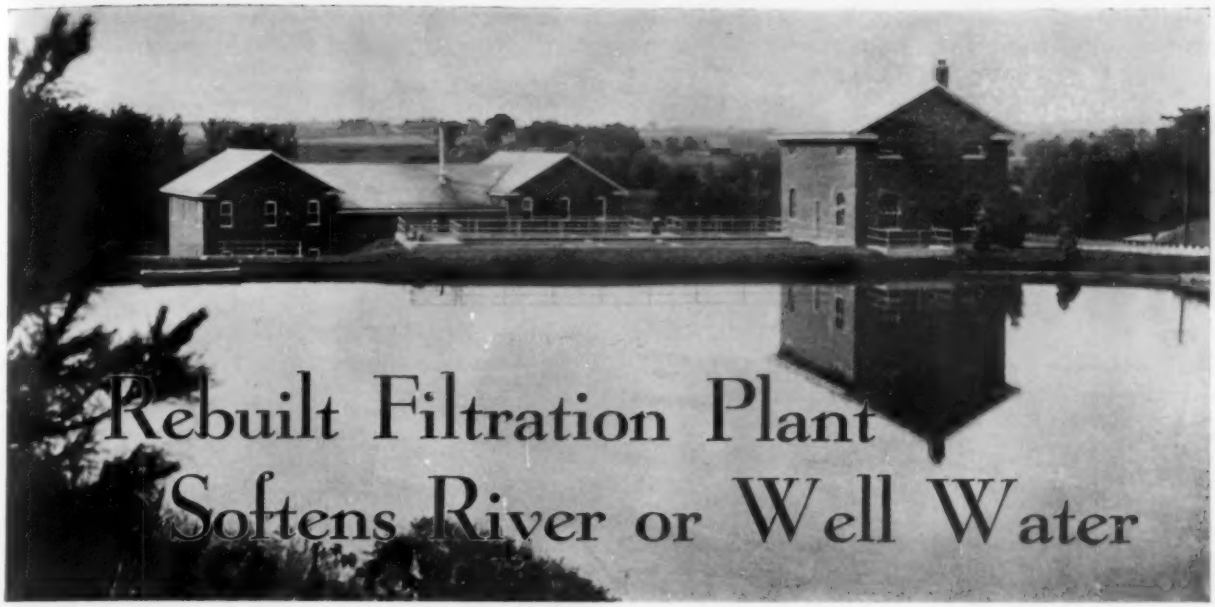
The report showed that while traffic deaths rose 4 per cent, automobile registration jumped 8 per cent, to 28,270,000 registered motor vehicles, "a greater number than ever before traveled American streets and highways." This record-breaking number of vehicles traveled 225,000,000,000 miles in 1936 (computed from American Petroleum Institute figures on gasoline consumption), 22,000,000,000 miles more than in any other year on record.

The Council totals showed that 18 states and the District of Columbia reduced traffic deaths 7 per cent in 1936, although they experienced a 10 per cent advance in gasoline consumption. The remaining 30 states, with gas consumption up 12 per cent, reported a 9 per cent increase in deaths. The Council said a survey showed that all but 2 of the 18 states which recorded death reductions carried on "either a complete program of safety engineering, legislation, law enforcement, education and safety organization, or have done excellent work in one or two of these lines."

Of the 30 states which showed increased death totals, according to the report, "more than half have not performed notable work in any important branch of traffic safety effort, although several have recently started such activities. These should show results in 1937."

The Council said that for the entire country the death toll in urban areas dropped 100 from 1935 to 11,700. However, deaths in rural areas rose from 25,200 in 1935 to 26,800.

Pedestrians killed by traffic in 1936 numbered 16,650—500 more than in 1935, while victims who were occupants of cars were 1,000 more numerous in 1936, the total being 21,850. Compared with 1927 totals, pedestrian deaths showed an increase of 33 per cent; other traffic deaths, 64 per cent.



Rebuilt Filtration Plant Softens River or Well Water

...able River Water and Hard Well Water with Iron and Manganese Make Chemical Control Important

IN October, 1935, the city of Oskaloosa, Iowa, started the operation of its rebuilt 2-mgd filtration plant, with provision for the softening of the hard river and well water available as sources of supply. The new plant made possible the use of river water at times when it was satisfactory and not too difficult to treat. The hardness of the river water varies from 214 to 450, with a wide range of turbidity. The wells have a minimum hardness of 280, but this increases to 350 at times owing to low river water level.

The new source of river water is the South Skunk River, where a 12-inch intake pipe with a screen is laid in the river behind a low dam to pool the low flows of the river. The water flows by gravity to a pump house located about 300 feet from the river bank. The pumping equipment in this low-pressure pump house consists of two 2-mgd Cameron centrifugal pumps working against a 75-foot head and driven by 40-hp General Electric motors. The water is pumped direct to the aerators at the plant through a 12-inch cast iron line.

The well supply consists of four Kelly concrete and gravel wall wells 18 inches in diameter and from 40 to 55 feet deep. One of the wells is pumped with a Layne & Bowler 900,000-gpd pump, and the other three are connected with the Cameron pumps at the low-lift pumping station.

Aeration and Chemical Treatment

The mixed well and river water, or the one being used, reaches the treatment plant on the hill above the filters through the 12-inch line. The water is first aerated by a submerged Vogt Aer-O-Mix machine. Iron sulphate is fed to the tank in which the aerator is located by an International dry-feed machine at rates varying from 0.1 to 4.0 grains per gallon. At the base of the aerator, milk of lime is fed by an Omega dry-feed machine with water at 160 to 170 degrees for slaking. The rates for the lime vary from 7.5 to 15.0 grains per gallon. Another Omega dry-feed machine is also installed and is used for feeding soda ash when that chemical is used.

This river water needs sulphate of iron or alum for coagulation, and sulphate of iron has given better results and is more economical to use. The well water contains iron in an amount sufficient for coagulation purposes when pumped alone, but, owing to the magnesium present in the well water, treatment cost runs higher on account of the extra lime it is necessary to add to remove the magnesium.

From the Aer-O-Mix machine the water flows to a Dorr flocculator, where it has a one-hour detention period, thence on to two settling basins run in parallel and giving a two-hour settling period. The settling basins are equipped with Link-Belt Straightline sludge conveyors, which pull the settled floc back toward the influent end of the settling basins and into a sump. The effectiveness of the treatment and the excellent settling of the floc is demonstrated in the effluent end of the settling basins, where, during optimum operation, both flights of the sludge conveyors can be seen through the clear water, which is 12 feet deep.

Recarbonization

From the settling basins the water flows through one corner of the chemical building and into the recarbonization basin, which is 8 x 10 x 12 feet deep. Here the water flows across the basin, while the carbon dioxide gas is released through a grid of pipes in the bottom of the basin.

The carbon dioxide is produced by feeding rice coal to a grate under a boiler by means of a mechanical stoker. The boiler provides the hot water for the lime feed, and the gases of combustion are damped in the flue and sent to the concrete scrubber, measuring 6 feet square and 10 feet

deep. Sprays of water from the top strike a bed of crushed granite, 1- to 2-inch screen size, held on a grate of triangular section concrete bars. As the water trickles through the bed of stone, it meets the rising gases and cleans them. Above the sprays is a bed of excelsior for drying the gases and filtering before they go to the Worthington compressor, driven by a G-E 5-hp motor.

A 16-inch line from the recarbonization chamber leads to the far end of the 6-mg reservoir, where at the maximum rate of operation the water has a detention period of 96 hours with a pH of 9.0 to 9.6. From the reservoir the water goes through a 14-inch line, reduced through a 12-inch Golden-Anderson regulator to the final recarbonization basins, where the pH is brought down to 8.4. The water remains three hours in this chamber after flowing over the released gases at the entrance channel.

The Filters

From the second recarbonization basin the water flows by gravity to the two 16 x 24-foot filters through a 16-inch cast iron pipe. These filters were a part of the original installation and were used in the rebuilt plant without change, except that the building was enlarged to include the new pump section, and the wall was brought forward to give a better architectural effect. The underdrain or mainfold system consists of a central concrete trough with a tight iron plate on the top, to which are connected T's and the 25 laterals for each filter. Over the laterals is 5 feet of graded gravel and 32 inches of sand. The tops of the five wash-water troughs per filter are 3 feet above the top of the sand. The filters are given a 10-minute wash at 6,000-gpm three times in two weeks. The filters will run 250 hours without washing, according to the loss-of-head gages, but they are washed at regular intervals so that they will be ready for any unusual demands on their capacity. They are equipped with Simplex loss-of-head gages and rate-of-flow controllers.

The wash water is furnished by a DeLaval centrifugal pump driven by a 50-hp G-E induction motor, and with the suction in the clear well located under the filtration plant. The well measures 60 feet square and is 14 feet deep.

High-Pressure Pumping Equipment

The pumping plant is located at the opposite end of the building from the filters. The city has a 400,000-gallon Pittsburgh-Des Moines elevated steel tank with the top flow line 240 feet above the pumps, providing storage and a definite head for the pumps to work against.

The service pumps include a DeLaval 2-stage 850-gpm unit with a 75-hp G-E induction motor. The rating on this pump is against a 245-foot head. There is a pair of Dayton-Dowd cross-connected centrifugal pumps with a 200-hp G-E induction motor mounted on the same base, but between the two pumps, which deliver 1,450 gpm against a 300-foot head. These pumps were installed for emergency service and have been used only when flushing out water mains. A standby pump, a DeLaval 625-gpm pump with a drive either by a 75-hp G-E motor or a Kermath 100-hp 6-cylinder gas engine, completes the service pump installation.

The water is chlorinated before delivery to the city by either one of a pair of Wallace & Tiernan vacuum feed chlorinators. McKesson-Churchill liquid chlorine is used in cylinders mounted on Fairbanks platform scales for checking the weights each day.

Chemical Results

The softening and character of the water from the river and the wells, and the final effluent, are shown in the following tabulation:

1—RAW WATER—(River)

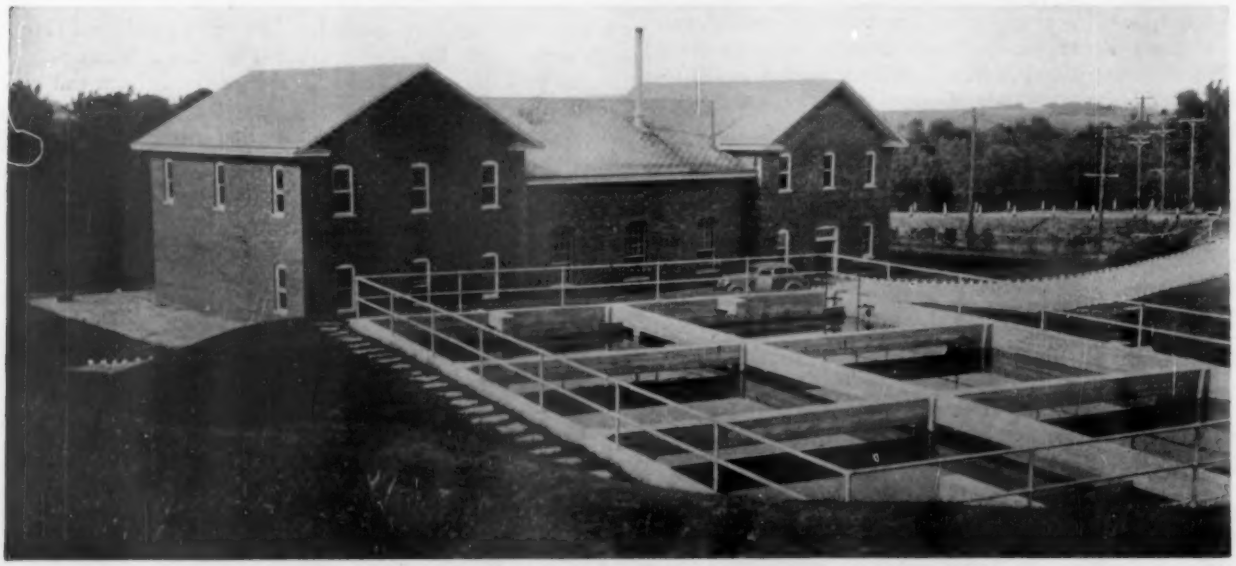
One-week average with pumpage of 957,000 gpd

pH	M.O.	Free CO_2	Non-Carb.	Total H.	Turb.	Temp.
8.0	236	4.0	28	264	50	74

Treatment: Lime dose 9.6 grs. per gal.
Iron 2 grs. per gal. No soda ash.

Final Effluent

pH	M.O.	Non-Carb.	Total H.
8.4	50	38	88



THE NEW PUMPING STATION AND FILTRATION PLANT, OSKALOOSA, IOWA
The settling tanks and rebuilt pumping station seen from the hill beside the reservoir and chemical building

II—WELL WATER

One-week average with pumpage of 816,000 gpd

pH	M.O.	Free CO_2	Non-Carb.	Total H.	Temp.
7.2	268	6.0	24	292	56

Treatment: Lime 14.6 grs. per gal.
No iron. No soda ash.

FINAL EFFLUENT

pH	M.O.	Non-Carb.	Total H.
8.4	56	32	88

III—RIVER

One-week average with pumpage of 740,000 gpd

pH	M.O.	Free CO_2	Non-Carb.	Total H.	Turb.	Temp.
7.2	216	10.0	24	240	2,300	66

Treatment: Lime 8.5 grs. per gal.
Iron 2.4 grs. per gal.

FINAL EFFLUENT

pH	M.O.	Non-Carb.	Total H.
8.4	60	28	88

The consumption of water in the city of Oskaloosa went as high as 1,273,000 gallons per day during the hot spell in July, 1936, while the average consumption during the spring of the same year was 750,000 gallons.

The new softening plant was placed in operation in October, 1935, under the direction of V. B. Trueblood, Superintendent of Water Works, with Raymond Hoops as Chemist and Chief Operator. The plant was built as a PWA project from designs and plans of the Brown Engineering Co., of Ottumwa, Iowa. The city is 100 per cent metered.

Cost Comparison

The chemical and recarbonization cost for softening river water in Table I runs $8.95 per million gallons; Table II, recarbonization and chemical cost, $11.95 per million gallons; Table III, chemical and recarbonization cost, $9.75 per million gallons. The increased cost of river water in Table III as compared to the cost of treatment in Table I is due to the fact that the water was turbid and it was necessary to use larger quantities of sulphate of iron. Higher cost of softening well water was due chiefly to the magnesium content of the well water. It is not unusual to find Mg in amounts as high as five parts Ca to four Mg. In river water the Mg content seldom goes above 30 ppm.

Soda ash, to reduce the non-carbonate hardness, is used during the months of December, January, February, and March, owing to the fact that non-carbonate hardness increases when the river is frozen over. Owing to the lower temperature of the water, it is impossible to reduce the temporary hardness to the same extent as during the summer months. This difference must be taken care of by reducing the permanent hardness by using soda ash. The average dosage is 1.3 grams per gallon. Recarbonization and the hot water used for slaking lime costs approximately $1.25 per million gallons on all types of water.

How Monroe Pulls Out of a Sheet Ice Jam

Investment in Dynamite and Coordination of Observations Prevented Repetition of Flooding Last Spring from Ice Jams

MONEY and brains can solve most problems, even to preventing the annual flooding of sections of a city. Monroe, Mich., has demonstrated it to a remarkable degree with only a small expenditure of cash and a large use of "gray matter" in fighting ice jams in the Raisin River. This river, which cuts through the city, empties, when not frozen over, into the harbor three miles beyond in Lake Erie. In flood years it is clogged with ice, and unfrozen water is turned into the city streets, yards and basements. According to R. E. Neis, City Director of Monroe, writing in the *Michigan Municipal Review*, these floods occurred regularly: in 1887 when a bridge washed out; in 1904, 1907, 1908, 1914, 1929 and 1930, when flooding caused serious damage to all property adjacent to the river.

First Preventive Steps

Nearly all these floods occurred when ice jammed on the lake side of the city where the river elevation meets the lake level. Ice flowing in from above the city would lodge against the shallow river bottom and pile up in ice jams, forcing water outside of the river banks. Rescuing riverside residents with boats was a regular occurrence in flood years. Water at a depth of three feet has flowed through the city's thoroughfare area.

To alleviate this constant flood hazard, the city constructed six small dams within the metropolitan area, raising the water level from one to four feet and creating a series of small ponds. On these, it was thought, ice could be floated through the city out to the lake without causing serious flooding and property damage when up-river ice broke loose. In addition to their practical value, the dams and ponds beautify the river by replacing the old unsightly lowland.

Gray Matter and Dynamite

The story of the outwitting of the ice jams in 1936 is a real thriller. The first serious thaw came on Sunday, February 23, when the river was coated with 22 inches of ice. At the first indication of the ice breaking, an open channel was made by the City Engineering Department for up-river ice to flow through unobstructed, by removing the sheet ice throughout the city. The ice could be cleared away very easily after the formation of small ice jams, which first occurred locally below each dam, where they slowly broke up the sheet ice and formed larger jams.

When the latter had raised the river level about two feet, dynamiting of the sheet ice was begun, and this, aided by pressure of the impounded water, released the jam.

The first dynamite broke up ice lodged against a downtown bridge pier; then, the fourth day after the thaw started, a serious jam formed when two smaller jams broke loose and piled up against a third in the eastern section of the city. This jam was a mass of huge ice cakes 22 inches thick, extending a quarter-mile up river, and raised the river level six feet in two hours.

The city was not caught unprepared. Blasting had been started on the sheet ice holding the jam an hour before the main jam formed, using 8-pound charges. As the ice accumulated, two charges of this size were set off simultaneously. After 70 pounds of dynamite had been exploded, the jam broke, just one hour after forming, and the entire mass flowed easily into the lower river channel about one mile away. It was necessary to use light charges, since the dynamiting was done close to the city's residential sections.

On the following day the jam at the turning basin grew to alarming proportions. At the same time two smaller jams were formed again in the upper part of the city, threatening to obstruct up-river ice. Blasting was started in the turning basin with 16-pound charges placed 5 feet below the water surface and spaced on 30-foot centers. As many of these charges as possible were exploded at one time, facilities limiting the number to 16. Such a discharge would rock the entire basin. It soon broke up the sheet ice, but failed to move the jam. A few charges placed in the jam itself were ineffective, because the jam had become so wedged. Then at 8 feet below the surface a very heavy concentrated charge of 150 pounds of dynamite was placed in the head of the jam. It was thought that this charge would be most effective, since it would add to the force being exerted by the 5-foot head against the jam causing a condition similar to water hammer. This charge did free the jam, and one mile of locked river ice moved out into the turning basin, where the sheet ice had already been broken up.

With the river channel open for a distance of 3 miles, all obstructions in the residential sections were removed, so that up-river ice upon breaking loose could pass freely through the city. Three days later, on March 4, ice from the up-river jam began to move and tighten up. Other jams up-stream broke loose, and upon reaching Waterloo dam, located one mile above the city, 6 miles of broken river ice was released with a huge flood of impounded water, and all went down through the city without a pause. This flow continued for an hour without any indication of a jam forming in the residential area. Other jams passed through the city the following day, leaving an open river for 8 miles above the turning basin.

Planning for the Future

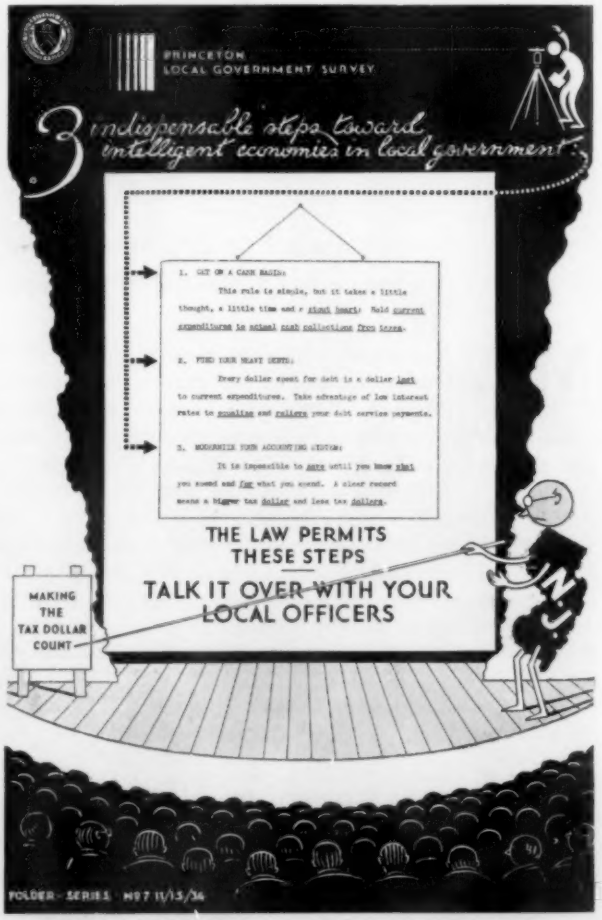
For the handling of future floods, certain observations by the City Engineering Department, including a large gallery of photographs, are believed to be invaluable. A 24-hour patrol of the river is now made during the season when jams may form, so that it will be possible to anticipate jams and gather further data for the department's records. River readings, taken at points least affected by the jams, give a forecast of any serious piling-up of ice. These precautions are considered necessary, judging from past experiences, when floods have occurred quickly and endangered lives before relief measures could be taken.

The Department found, for example, that ice jams were easily moved by taking action before they were firmly wedged in place. Dynamite is very effective, both in breaking up sheet ice and in releasing jams already formed, the amount used varying with conditions.

In every case where jams broke loose, without dynamiting, it was between 1 and 4 P. M., and in no case would ice become dislodged of itself when the temperature was below freezing. Jams which had raised the river level would move at short intervals during the afternoon when the temperature was above freezing, owing, no doubt, to the fact that key points would melt under pressure.

Monroe was very fortunate in avoiding severe property damage and possible loss of life in 1936. Prevention cost the city only $537, including only the dynamite purchased, and excluding the cost of labor and departmental services. Many other cities might well plan their programs to meet emergencies as well as has Monroe. Small expenditures thoroughly mixed with plenty of "gray matter" means saving in the expenditure of energy for rescue work and for relief.

Spend What You Know You Have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THIS ILLUSTRATION IS A FOLDER ISSUED BY THE PRINCETON UNIVERSITY LOCAL GOVERNMENT SURVEY, WHICH RECOMMENDS SPENDING CASH, SEEKING LOW INTEREST RATES AND KEEPING CLEAR RECORDS

A Challenge to Public Administration in America

By L. HILL
General Secretary, National Association of Local Government Officers of Great Britain

MANY people when looking at one of the finest sights in the world, New York City and its environs from the R. C. A. building in Rockefeller Center, must wonder why Broadway is allowed to cut across the symmetry of the planning of Manhattan. There is almost the whole story of local government in that street-planning "fault." When I asked my companion how Broadway came to cut across, as it were, the plan, he just murmured, "A cow-path, originally, I suppose, or it may have been an Indian trail."

The story which it tells is not original, neither is it peculiar to New York City. There are many more similar stories to be related of much older cities, especially in Great Britain. Henry W. Toll drew our attention to the same story, in that admirable address with which he delighted us all at the Delaware Water Gap Conference. "I hope," he said, "that each of you fully realizes the fact that when we are hunting for a path through the forest, we only have to discover the way once. When, in the early days of the West, the prospector for gold in the Rockies hunted out a pass by which he could cross the divide with his burro and his pack, with his pick and his shovel, the route which he blazed did not need to be discovered afresh when the time came to build the pack trail and then the wagon road and then the modern concrete highway."

The pack trail went around obstacles which would today not be obstacles to a mechnical navvy, and although the pack-trail obstacle is no longer there, the wagon road followed the same route, and the concrete road did the same.

The Indian squatted on the banks of the Delaware, and industry, being just as free, did the same thing. The rest of the story is couched in the resolutions passed by the Regional Conference held at Shawnee, Pa., on the second and third of October last. "We," said 250 representatives of your states (New York, New Jersey, Pennsylvania and Delaware) and of the Federal Government, "endorse the efforts of the Interstate Commission—to abate the pollution of the waters . . . by industry and sewage." Again, Governor Harold G. Hoffman of New Jersey said, "Our presence here is testimony to the fact that the Delaware River unites rather than divides" the four states. Put that in juxtaposition to the philosophy of the average American and it sounds like stark-naked revolution.

The Only Sure Safeguard Against Communism

That something should happen which proves the interdependability of states; that something should happen to prove the need for the Federal Government to intervene, is "the something" which is causing so much controversy in other countries, as well as in America. We, and you, are afraid of the diagnosis of present-day ills; we are afraid to admit that public administration is a necessity, and that its limits are to be measured only by the inadequacy of private enterprise. We are still inclined to believe that it has an economic limit. We've put it in that God-forsaken world of politics instead of in the realm of science. In England, the nit-wits call it Socialism and they put Socialism, Bolshevism and Communism together —they put them all into one "red" box, and they are obstinately adamant against recognizing the simple truth that public administration, in its best sense, is the only sure safeguard against the worst features of Communism.

Those who plead for the curtailment of expenditure in public administration until industry is again flourishing, overlook the fact that a very large share of the cost of public administration today is the legacy from industry in the heyday of its prosperity. Public administration has displaced the Church for remedying social evils. It has to bear the burden of straightening out the now roundabout path taken by the covered wagon, the removal of the derelicts of shifting industry, and the ill-consequences of modern progress. The order, the planning, the preventive philosophy of public administration, are the only guarantees against that social anarchism which we have euphemistically called *laissez faire*, a term which we have accepted because the words sound like something much less vicious than its correct interpretation in vulgar English. You call it American freedom!

The cataclysm of 1932 in the United States brought its people up against the same problems which have confronted Great Britain and other nations for a long time. You crashed into them. We have been coming up against them gradually. Our people are taking the solution in such small doses that they hardly notice it, and the inoculations will in time make us immune to the disease, but you have had to face a major operation. You have stood up to it because you had a wonderful reserve in that small band of pioneers, frontiersmen of the best class that the Americas have known, that tiny group of professors and enlightened citizens who have for many years advocated the adoption of the true principles of public administration, who have been making regular pilgrimages to Europe for nearly three decades, to my knowledge, to see how the older countries have solved or muddled the problems which they knew would some day be yours. The American people will one day acknowledge that it was a good thing to transfer the Government from Wall Street to Washington.

But you must learn from our mistakes. The London County Council is now spending billions of dollars in securing stretches of open country which will in time establish a "green belt" around the Metropolis. When this project was first mooted, when it was in the realms of what the business man calls "intelligent anticipation,"

it could have been done at less than half the cost and the "belt" brought half as many miles nearer to the center of London than the present scheme. With one or two exceptions, you have time to plan your "green belts"; you have time to decide upon the best and most efficient size of your towns; you have space in which to plan your building lines; and, generally, to avoid doing things which we find so costly to correct. *The waste in public administration is not in doing things, but in undoing them.*

It is wrong to assume that such forward thinking means interference with the liberty of the people. It may mean some interference with a few, but relatively they are unimportant. The vast majority of the people of all nations get very little out of life beyond the bare minimum, and no nation has a right to be assessed upon anything except its datum-line standard of living. In any measurement of that standard we must include culture, quality of thinking, decency of conduct, and good health. A nation which leaves these fundamental qualities of common decency to charity organizations is not civilized.

The standard of government depends upon the will of the people, and their measurement of that phenomenon depends upon precept and education. Their confidence in the system is the measurement of the integrity of the public service personnel.

EDITORIAL NOTE.—The foregoing article, by one of the foremost authorities on local government in Great Britain, has been written especially for THE AMERICAN CITY following Mr. Hill's recent visit to the United States.

Shelter for the Poor

By R. E. SHERMAN
Mayor, El Paso, Texas

WE, in America, are on the eve of a demand for housing reform that no government can overlook; this for the reason that conditions have been brought to public notice that no body of lawmakers can view and with impunity pass by on the other side.

For housing reform has passed the stage of unpopularity, as the evils of the slums have passed the period of quiescent acceptance among the American people. It has gone through the degrees of slight notice, widening concern, general interest, and outraged sentiment, until, from being considered an idealistic dream impossible of realization, it is today accepted throughout our land as a demonstrated need, fast becoming a popular demand.

The next Congress is certain to pass, with presidential sanction as clearly indicated in the campaign, a Housing Act broadly designed, sweeping in its provisions and forceful in its nature, providing for both the means and the method to accomplish its full purposes. And within twelve months we shall probably be in the midst of an epochal movement, memorable in history, perhaps second in economic importance only to the westward development following the Civil War, and with far-reaching social outgrowths and consequences. Slum clearance and housing reform will not constitute the whole program, but it will be an integral part of no small consequence. For a new American conception of what should be the least to be accepted as shelter for the poor is swiftly in the making. It will be almost certain to take form and substance, impressing itself on the standards of our national life definitely and firmly, in the next few ensuing years.

Gradually it has become a matter of national realization that the slum or the blighted living area, however varied may be its form, exists in every city in the land. Equally plain has it become that these must be regarded, in each instance, as a carcinoma on the mental, moral, social, physical and economic life of the city in which they exist. For these districts we pay a heavy cost. We pay in crime, disease and juvenile delinquency first of all. But we also pay in public service and burdensome charitable requirements. We pay in tax delinquencies. We pay in a lowering of civic pride, in a long train of social evils, in a continuing heritage that spreads its debasing effects throughout the frame of society. Worst of all, we pay in sub-standard citizenship and a lessened morality. In every city the percentage of tuberculosis, of smallpox, of typhoid, of diarrhea-enteritis, of rickets, of anemia, and many other diseases may be measured largely by the extent and populousness of that city's slums. Epidemics almost unfailingly have their origin there. Darkness, fetid air, vermin and disease are certain to breed discontent and hatred of society. Anti-social tendencies and resentment against the law originate in the slums.

American cities, however bravely they have sought to cope with the evils that are the outgrowth of their slums, have for the most part sought amelioration, not cure, and have dealt with effect and not with cause. Finding that such districts germinate disease, they have established free clinics, built hospitals and expanded the field of preventive medicine. Recognizing that they produce crime and delinquency, they have tightened police supervision and enlarged their jail facilities. Today it is a strange sort of city executive who has not arrived at the conclusion that we must look to the cause of these ills and attack the problem at its source if we would solve it ever.

For this there must be an awakening of public interest, a sanction that comes from society itself, and a program of Federal aid, Federal planning and long-range vision in which Federal, state and local governmental efforts are coordinated. Without all these, the task is too great. Local government knows full well that it is beyond its powers, alone. With these it can be a realization—though the full solution may be the work of almost a generation.

"Tyranny, like hell, is not easily conquered," wrote Thomas Paine, "but the harder the conflict, the more glorious the triumph." In this contest, and as our nation gradually changes the dwellings of the poor from mere shelter to human habitations of decent living, and as we establish a housing standard which admits of hope and which may generate ambition and the effort toward better things, the cities will be called upon for advanced thinking, for the exercise of broad policies, and for changes in the social order hardly thought possible a few years ago. For our urban communities, the movement, as it develops, should be looked upon as one both of oppor-

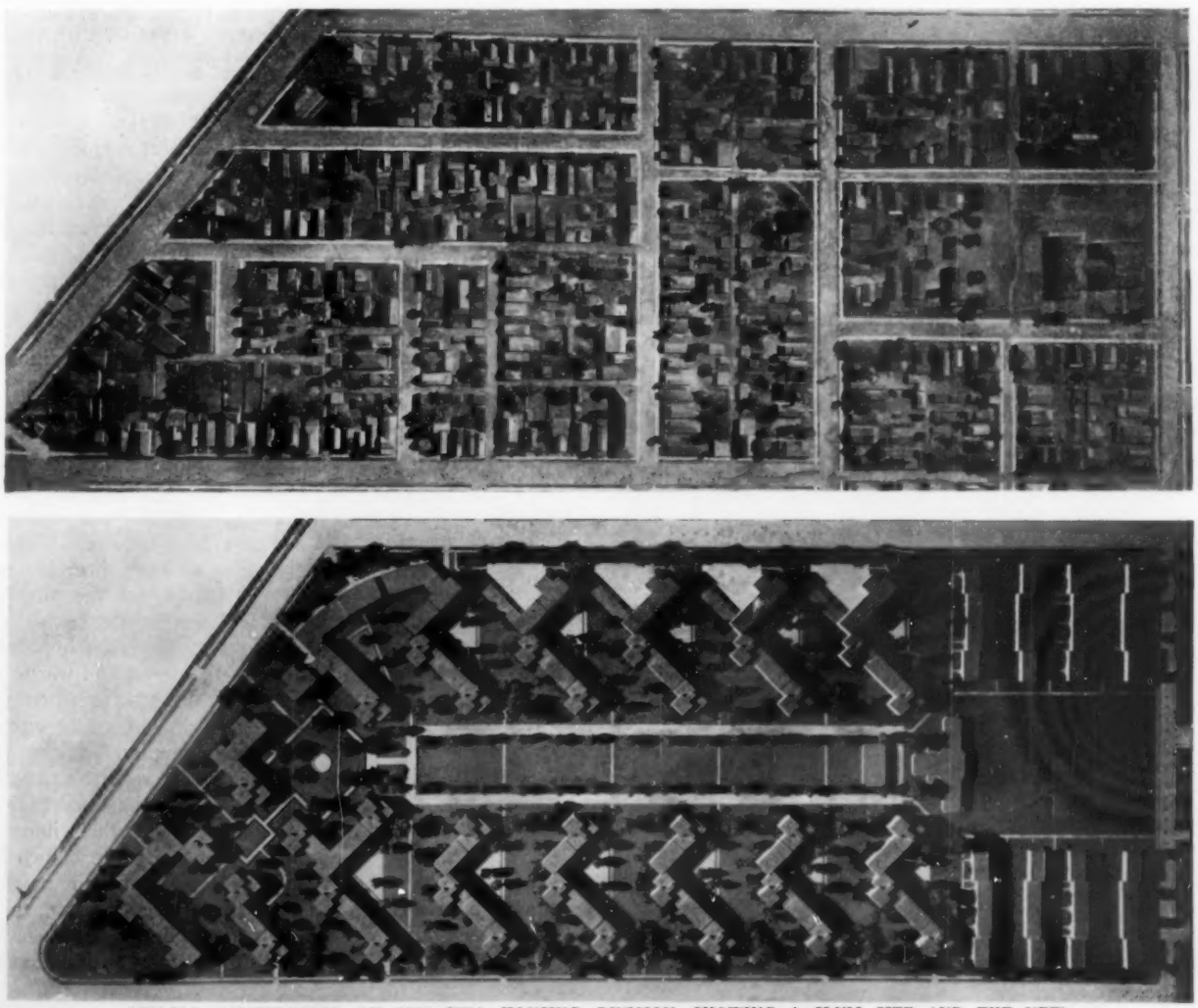
tunity and of privilege. The program is certain to come. Public interest has been awakened. Society is ready to grant its sanction. And national legislation is ready for introduction and presumably for passage.

Speaking to the members of the United States Conference of Mayors at Washington, D. C., on November 17, Harold L. Ickes, Secretary of the Interior, after first declaring that housing is the most vital social challenge before us today, said:

"We are going to have housing. It should be a local program, for which the municipalities shall be responsible, with the Federal Government giving aid and counsel. * * * The Federal Government should be willing to make loans and grants to cities in aid of low-cost housing. It can continue to give technical assistance and make available to municipalities the fruits of its experience the last three years. It can go forward with a program of research, without which genuine low-cost housing is impossible—such research as could not be undertaken by individual cities. * * * The real burden must be assumed by the cities. It is not to be expected that all cities will carry their responsibilities with respect to housing, but no attempt will be made to force any municipality to do what it does not wish to do. The laggards will simply be out of step in a significant and praiseworthy social movement. * * * What will the cities have to do? In the first place they must be ready to spend something to get rid of their slums. They ought to be willing to stop the drain on their treasuries that the slums cause."†

From the above it is clear that the challenge to the cities is to do their part, to keep pace with the National Government. The cities must meet that challenge and accept that responsibility. Municipal government is already subsidizing its slums; the subsidy is in the form of public costs, and a study of fiscal matters will readily reveal them. Private investment has signally failed. It is stymied and helpless before the housing problem of today. But, in every city, as public enterprise leads the way, a standard will be set that private investment will recognize and be influenced by. The outlawed tenements, the railroad shacks, the smoky villages, the tin-can habitations, the dilapidated wrecks, the haunts of disease and vice, are about to see the passing of their day. Shelter for the poor is to be of a new and higher kind within a few short years. It will be more than mere shelter. It will have a connotation that we have previously given only to the precious word "home." America will re-house its low-income group, showing as it has always done, its faith by its works. Does it seem any more difficult of accomplishment than building a bridge across San Francisco Bay?

† See also THE AMERICAN CITY for December, 1936, page 69.



MODELS CONSTRUCTED BY THE PWA HOUSING DIVISION, SHOWING A SLUM SITE AND THE NEW COMMUNITY NOW UNDER CONSTRUCTION WHICH IS TO REPLACE IT

Putting Punch into Regulations of Cross-Connections

By J. ARTHUR JENSEN
Engineer, Water Works Department, Minneapolis, Minn.

IN every city there exist a considerable number of private water supplies. Most of these obtain water from adjacent streams or wells. Such private supplies are resorted to because no other water is immediately available, or with the erroneous idea that the water can be thus obtained at less cost than to purchase it from the public water works.

The weakness of private supply systems lies in the fact that they may not be reliable in continuity of service, and in their inadequacy as to quantity or availability for efficient fire protection. Where the public supply is suitable for steam use, and the private supply is a hard water, another disadvantage may be present. For these reasons it has been desirable for consumers to interconnect private water supplies with the public supply as a standby for adequate fire protection and as a safeguard against interruption of service due to breakdown, and also for partial use of the public supply where there are advantages in its use.

Such interconnections have been customary practice in all cities for many years. Where the quality of the water could be relied upon to produce no sanitary menace to the public supply, the cross-connections have not been considered hazardous. With the raising of standards of purity of public water supply, these interconnections have, however, become objectionable. Most cities now distribute purified or chlorinated water, while private water supplies usually are untreated, and in many cases seriously polluted. The menace of such cross-connections then became fully recognized and regulations were drawn to prohibit their existence. The most potent objection to such procedure was from the underwriters, who were loath to consent to the removal of a direct supply of public water into private fire-fighting facilities.

The first step in the removal of cross-connections for the protection of a purified public supply was prohibitory legislation. This resulted in the elimination of direct connections, but leaving the pipes in such condition that an emergency re-connection would readily be possible in a few minutes if required. In other cases double checks and valves were resorted to without actually breaking the pipe line. These devices, however, have proved wholly inadequate. Valves and checks are subject to leakage, and where re-connections were made they were usually left in place until the next inspection revealed their re-establishment. They also have the disapproval of sanitation officials.

The frequent requirement of a re-connection of the public supply into the premises where a private well is the source of water has made it necessary to provide more adequate service without the possibility of back-flow. Such connections generally work to the detriment of the water user, by lessening the water pressure under certain conditions or causing him to install extra piping, tanks and in some cases pumping equipment. Since he is not a regular water customer, he should not object to these requirements in order to have the advantages offered by the public water supply—advantages which regular consumers have met.

A public water-supply connection that will not permit back-flow must consistently conform to the following regulations:

"No physical connections or openings for making physical connections between the public water supply and a private supply shall be permitted to exist. Where premises are supplied with other than the public supply and it is desired to use the public supply wholly or in part on the premises, the public supply shall be discharged into a supply tank by an independent overhead pipe terminating in an opening at least 6 inches above the top or rim of the tank, and under any condition shall be sufficiently high to prevent back-siphoning. The tank shall not be located where it will be subject to flooding or below ground level. Plans and inspection shall be approved by the city engineer. Premises found to be using water by direct interconnection to the private system shall be shut off in the street, and shall not be turned on until these regulations have been complied with.

It is common practice of cities to make regular inspections of interconnected services. Where existing connections are uncoupled and not in use, no effort is made to enforce the regulations, since the owner might claim that he is not using city water, and therefore the municipality would have no jurisdiction in the case. However, if the owner is found with an actual connection and using public water, he is a violator of the regulations, and the penalty is to deprive the premises of public water until the requirements are met.

There are of course modifications of these conditions that will arise and require special attention and treatment. A certain building may have a supply of water from a well for air-conditioning only and desire the public water for boilers, hot water and general plumbing fixture use. It would be necessary that the two systems be independent and accessible for inspection to prevent interconnection. Such arrangements or similar ones will require constant attention by municipalities in order to keep them in the proper condition necessary for the safety of the public. Connections made as provided by the regulations cited should be constructed in a clean sanitary location in order not to introduce foreign matter into the water, and when so constructed will permit the use of water both from private sources and from the public supplies without inconvenience to the user or danger to the community.

The duty of enforcing cross-connection regulations will without doubt become more stringently administered in the future in accordance with the realization of their importance as safety measures in protecting the health of urban population. The principal force to be applied is the power to deprive premises of water until service arrangements are properly installed. Likewise, regulations must be such that all premises may be served in accordance with all sanitary requirements.

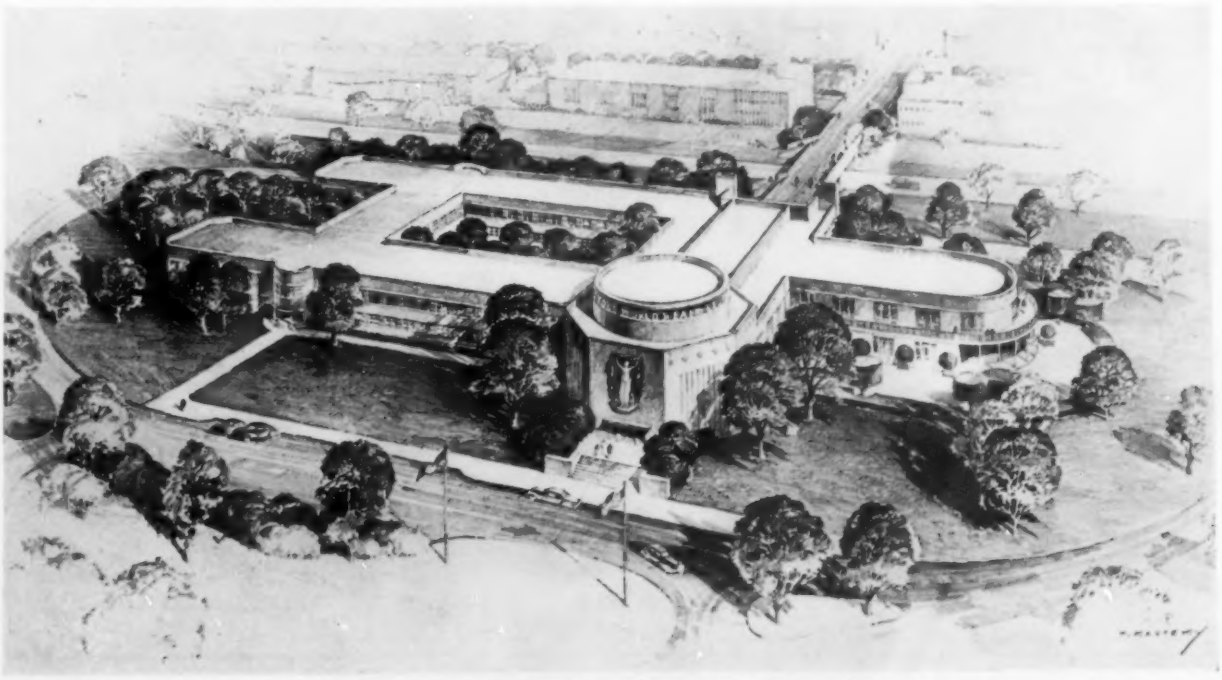
—A paper presented at the 1936 Public Works Conference at Toronto.

New York World's Fair Begins to Take Form

THE 1939 Mecca for perhaps 50,000,000 sightseers from every corner of the earth—the New York World's Fair—is beginning to take form on the Flushing Meadow void, the 1,216-acre site of which is shown on the front cover of this issue. An artist's conception of what the $125,000,000 project is expected to look like, when completed, is shown above. Dominating the exposition grounds in what will then be the permanent Flushing Meadow Park is the massive Theme Tower, 250 feet high, in which will be summarized the Fair's central motif—"Building the World of Tomorrow." From it radiate broad avenues and promenades leading to the ten exhibit zones into which the Fair will be divided, namely, Clothing, Shelter, Education, Health, Recreation, Sustenance, the Arts, the Basic Industries, Public and Social Services, and Government and Cooperation.

At the far end of a series of fountains and basins in the center of the exhibit grounds between Horace Harding Boulevard and the Long Island Railroad will be the Plaza of Governments and the Federal Hall. To the left of Horace Harding Boulevard will be the Meadow and Arboretum Lakes. The Fair's amusement section will stretch for more than a mile along the upper shore of the Meadow Lake. The total length of the grounds, from Flushing Bay to Kew Gardens, is 3½ miles.

The Administration Building will be under construction in a few weeks. The architect's drawing, reproduced below, of this $900,000 structure shows the octagonal "showroom" and other features, which will include 57,000 square feet of net floor space for offices and workrooms, in addition to service rooms and executive suites. Strong blue on light-colored stucco will accent entries, porticoes and window interspaces. The location is outside the exposition grounds proper, at the juncture of Grand Central Parkway with the Long Island Railroad, but an overpass will afford direct approach from the second floor to the pay-gates. After next August this will be the scene of the multiple business activities necessary to bringing the world to Flushing Meadow. Meanwhile, the 500 office employees already at work are housed in the Empire State Building in Manhattan, under the guidance of a Distinguished Board of Design.



$900,000 "NERVE CENTER," FIRST NEW YORK WORLD'S FAIR BUILDING

Increased Use Makes Cheap Power Cheaper

By H. W. MEEKS
Superintendent, Alcorn County (Miss.) Electric Power Association

TVA's largest cooperative customer is the Alcorn County Electric Power Association, with headquarters in Corinth, Miss. Beginning August 1, the 10 per cent surcharge to commercial and industrial users was removed, making our rates and those of Tupelo the lowest in the Tennessee Valley Authority territory. The reduction, made possible by greater use of electricity in the city of Corinth and Alcorn County, saves the customers some $6,000. Advertisements of this measure and of the rates and financial condition of the Association are reproduced here.

Rates as low as ¼-cent are offered for a consumption exceeding 500,000 kwh. The top industrial rate is 1 cent for 10,000 kwh plus a demand charge of $1. Commercial rates range from 0.8 to 3 cents; residential rates, up to 3 cents for 50 kwh.

The purposes of the Association are listed below:

1. To purchase, lease or otherwise acquire a distribution system in the county, to furnish electricity for all purposes "at cost and without profit."
2. To operate substations.
3. To purchase TVA power at wholesale.
4. To sell electrical supplies and equipment at cost. (There is no intention, however, to practice merchandising.)
5. To acquire franchises.
6. To acquire property and sell bonds.
7. To accept into membership all applicants.
8. To accept gifts of property and voluntary services.
9. To make any necessary business contracts.
10. To do anything else necessary to carry out the purposes of the corporation.
11. To enjoy all powers and privileges of a Mississippi corporation except that capital stock and shares of stock shall not be issued. All members have equal voice.

Earnings are first devoted to expenses and other obligations, to reserves for new construction and depreciation, and the residue is returned to the members on a pro rata basis. A rural line and system expansion are now planned.

In the year ending June 30, 1936, we purchased 6,893,-620 kwh. Of this, 120,090 kwh was for municipal use at a charge of $3,632. The remaining 6,084,003 kwh sold returned $115,683 to the Association, producing a surplus amounting to $38,395.

Cheap Electricity

Because of Greater Use In Corinth and Alcorn County

IS FURTHER Cheapened

The *10 Percent Surcharge* On the Bills of Commercial and Industrial Members *Is Eliminated* On and After the August 1, 1936, Bills

THIS REDUCTION WILL EFFECT AN IMMEDIATE SAVING OF $6,000.00 ANNUALLY. NOR IS THIS THE LAST REDUCTION WHICH MEMBERS MAY EXPECT. THE REQUIREMENT FOR FURTHER REDUCTIONS IS AN EVEN GREATER USE OF ELECTRICITY. MEMBERS WHO ARE NOW CONSUMING LARGE QUANTITIES OF ELECTRICITY ARE NOT ONLY SAVING THEMSELVES A GREAT DEAL OF MONEY AT OUR PRESENT EXCEPTIONALLY LOW RATES, BUT ARE MAKING IT POSSIBLE FOR THE RATES TO BE AGAIN REDUCED IN THE FUTURE.

FINANCIAL STATEMENT

AS OF JUNE 30, 1936

ASSETS AND OTHER DEBIT ACCOUNTS

FIXED CAPITAL
Plant and Equipment $37,817.72

CURRENT ASSETS
Cash ..... $ 1,814.74
Notes Receivable 184.00
Accounts Receivable:
Consumers' $18,144.75
Miscellaneous 289.66 18,432.91
Materials and Supplies 8,351.81 28,783.44

DEFERRED CHARGES
Prepayments:
Insurance ..... $ 465.05
Taxes (Licenses) 22.16
Other Expenses ..... 226.28 $ 713.49
Extraordinary Charges:
Consumers' Installations $ 3,884.82
Misc. Temporary Items 362.26 4,247.12 4,960.61

TOTAL $70,561.77

LIABILITIES AND OTHER CREDIT ACCOUNTS

CAPITAL INVESTMENT
Membership Subscriptions Paid In $46,683.00
Invested Surplus ..... 38,161.61 $ 76,561.61

LONG TERM DEBT
Tennessee Valley Authority
Discount by Loss On Plant And Equipment
(owned or to be acquired)
Balance Outstanding 116,615.51

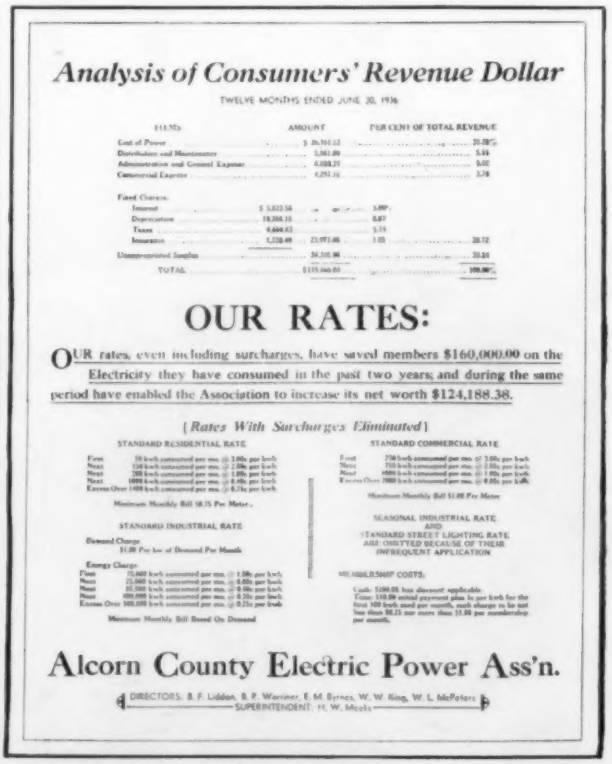
CURRENT LIABILITIES
Consumers' Deposits:
Old Deposits Accrued ..... $ 788.54
New Deposits ..... 165.00 $ 865.54
Matured Debt (TVA) ..... $ 1,678.38
Matured Interest on Debt 1,858.12 4,536.82
Accts Payable (Audited Vouchers) 6,732.64 12,135.00

ACCRUED LIABILITIES
Unmatured Interest Accrued ..... $ 158.11
Taxes Accrued 2,429.33 2,587.44

RESERVES
Depreciation Reserve $16,581.46
Amortization Reserve 132.77
New Construction Reserve ..... 11,000.00 $ 44,820.17

UNAPPROPRIATED SURPLUS
Balance June 30, 1935 Adjusted ..... $ 1,883.57
July 1, 1935 Thru June 30, 1936 ..... 6,295.86
$ 8,179.43
Deduct: Withdrawal of Term Members 1,542.27 $6,637.16

TOTAL $70,561.77



Analysis of Consumers' Revenue Dollar

TWELVE MONTHS ENDED JUNE 30, 1936

ITEMS	AMOUNT	PER CENT OF TOTAL REVENUE
Cost of Power	$ 26,161.12	22.78%
Distribution and Maintenance	5,961.80	5.15
Administration and General Expense	6,888.25	5.95
Commercial Expense	4,292.16	3.70
Fixed Charges:		
Interest	$ 3,822.56	3.30%
Depreciation	19,200.10	6.67
Taxes	6,666.62	5.75
Insurance	1,220.49	23,973.68 1.05 20.72
Unappropriated Surplus		38,395.96 33.24
TOTAL		$115,683.59 100.00%

OUR RATES:

OUR rates, even including surcharges, have saved members $160,000.00 on the Electricity they have consumed in the past two years; and during the same period have enabled the Association to increase its net worth $124,188.38.

(*Rates With Surcharges Eliminated*)

STANDARD RESIDENTIAL RATE

First 50 kwh consumed per mo. @ 3.00c per kwh
Next 150 kwh consumed per mo. @ 2.00c per kwh
Next 200 kwh consumed per mo. @ 1.00c per kwh
Next 1000 kwh consumed per mo. @ 0.40c per kwh
Excess Over 1400 kwh consumed per mo. @ 0.25c per kwh

Minimum Monthly Bill $0.75 Per Meter.

STANDARD INDUSTRIAL RATE

Demand Charge
$1.00 Per kw of Demand Per Month

Energy Charge
First 10,000 kwh consumed per mo. @ 1.00c per kwh
Next 25,000 kwh consumed per mo. @ 0.80c per kwh
Next 65,000 kwh consumed per mo. @ 0.50c per kwh
Next 400,000 kwh consumed per mo. @ 0.30c per kwh
Excess Over 500,000 kwh consumed per mo. @ 0.25c per kwh

Minimum Monthly Bill Based On Demand

STANDARD COMMERCIAL RATE

First 750 kwh consumed per mo. @ 3.00c per kwh
Next 750 kwh consumed per mo. @ 2.00c per kwh
Next 4000 kwh consumed per mo. @ 1.00c per kwh
Excess Over 5500 kwh consumed per mo. @ 0.80c per kwh

Minimum Monthly Bill $1.00 Per Meter

SEASONAL INDUSTRIAL RATE
AND
STANDARD STREET LIGHTING RATE
ARE OMITTED BECAUSE OF THEIR
INFREQUENT APPLICATION

[illegible] COSTS:

Cash 2.00 discount applicable
Time 5.00 initial payment plus 1c per kwh for the first 100 kwh used per month, such charge to be not less than $0.25 nor more than 15.00 per membership per month.

Alcorn County Electric Power Ass'n.

DIRECTORS: B. F. Liddon, B. P. Warriner, E. M. Byrnes, W. W. King, W. L. McPeters
SUPERINTENDENT: H. W. Meeks

Low-Cost City Pavements Developed with Tar

Experience of Ann Arbor, Michigan, with Road-Mix

By GEORGE H. SANDENBURGH
City Engineer

BETWEEN 1920 and 1930, the city of Ann Arbor used a chemical dust layer and spent $22,000 on the work. In 1927 the Board of Public Works decided that this method was giving no permanent results and that it would be well to experiment with some other type of dust layer. As the pavement had been maintained for ten years previous to 1927 with Tarvia with very good success, this material was decided upon for the experimental work.

The Experimental Street

A street about one-half mile long in the residential section was selected for the experiment. The subgrade was sand, and a concrete curb and gutter had been built and the street graded and graveled only a few years previous.

The dust and loose material were swept off the surface of the street with a tractor-driven rotary broom. One-third gallon of Tarvia B per square yard was then applied to the surface and allowed to penetrate for a period of 24 hours. Then another application of ¼- to 1/3-gallon of the same material was applied and immediately covered with 16 to 20 pounds of pea pebbles per square yard. The surface was dragged with a brush drag and then opened to traffic.

This street was given a seal coat of Tarvia A in the summer of 1928 and another seal coat in 1930. These seal coats consisted of a quarter-gallon of Tarvia A and 16 to 20 pounds of pea pebbles per square yard. This street has had no maintenance of any sort since 1930 and is in very good condition at the present time after six years of service.

Low-Cost Program Started

Owing to the success of the experimental street, a big program of low-cost bituminous pavement construction was decided upon in 1931. Three of the streets paved in 1931 were of the road-mix type and the rest of the surface treatment type. When costs were computed for the 1931 work, it was found that there was only a fraction of a cent difference in the cost of the surface treatment type and the road-mix type, the cost being 12.8 cents and 13.5 cents per square yard, respectively.

Sweeping the dust and loose material from the surface of the street, picking it up and hauling it away cost as much as the mixing in the road-mix method. We were frankly surprised to find that the road-mix method cost only 0.7 cent per square yard more than the surface treatment, and as the surface treatment is a wearing surface about ½-inch in thickness and the road-mix a wearing surface from 1½ to 2 inches in thickness, the road-mix method was adopted as standard.

Road-Mix Method

If the street to be paved is well graveled, with a depth of gravel of 6 inches or more, the surface of the street is scarified to a depth of 1½ inches, and ½-gallon of tar per square yard is applied uniformly to the street surface. The tar and loose material are then mixed by means of power graders until the tar is uniformly distributed throughout the gravel. This mixing will take from six to twelve turnings with power graders, depending on weather

ROAD-MIX OPERATION UNDER WAY ON A RESIDENTIAL STREET IN ANN ARBOR, MICH.

A COMPLETED ROAD-MIX STREET IN ANN ARBOR, MICH.

conditions. When thoroughly mixed, the material has a uniformly black color.

After thorough mixing, the bituminous mixture of tar and gravel is spread evenly across the street and another application of 0.3-gallon of tar per square yard is made and the material again bladed with the power graders until this new application is thoroughly mixed. After the second mixing is completed, the mixture is leveled off to the grade and contour of the street and then rolled with a 5-ton, three-wheel roller. The street is then opened to traffic, and after curing for a period of two weeks or more is given a seal coat of 0.25- to 0.33-gallon of tar, TM-2, and immediately covered with 16 to 18 pounds of pea pebbles per square yard, and again rolled with a 5-ton three-wheel roller. The next year, a second seal coat is applied, the same as the first year's with the exception that the bituminous material is TH-1 tar, RC-3 cut-back asphalt, or AE-3 asphalt emulsion.

If the street to be paved has not been well graveled or if the material in the street surface is too fine, from 1 inch to 1½ inches of pebbles passing a 1-inch screen is added to the surface of the street, then the road-mix work is done exactly as described before.

Equipment

The equipment used in constructing these low-cost pavements, other than that usually owned by the average city, is: one 1,000-gallon South Bend motor-driven bituminous distributor; two Austin one-man power graders; one 5-ton, three-wheel roller; and two 12,000-gallon storage tanks, heating boiler and pumps. If purchased new, this equipment will cost approximately $15,000.

Materials

The stone added to the surface of the street meets the following specifications:

Passing 1" sieve	100%
Passing ½" sieve	25 to 60%
Passing ¼" sieve, not more than	10%

The pea pebbles used for covering the seal coat have the following sieve analysis:

Passing ½" sieve	100%
Passing ⅜" sieve	75 to 85%
Passing ¼" sieve	20 to 35%
Passing No. 8 sieve, not more than	3%

Itemized Costs

The cost per square yard of low-cost road-mix bituminous pavements is itemized as follows:

Tar	10.654 cents per sq. yd.
Stone	2.893 " " " "
Pea pebbles	.644 " " " "
Miscellaneous	.220 " " " "
Labor	3.161 " " " "
Equipment rental	1.978 " " " "
Engineering and supervision 3%	.551 " " " "
Total cost	20.101 cents per sq. yd.

Second Year's Seal Coat

The cost of the second year's seal coat is itemized as follows:

Tar	3.28 cents per sq. yd.
Pea pebbles	.79 " " " "
Miscellaneous	.01 " " " "
Labor	.75 " " " "
Equipment	.26 " " " "
Engineering and supervision	.30 " " " "
Total cost	5.39 cents per sq. yd.

The second year's seal coat is considered as part of the original cost, making the total cost of this type of low-cost pavement slightly under 26 cents per square yard.

The above costs are based on the following wage rates:

Common labor	$0.50 per hour
Grader operators	0.60 " "
Truck drivers	0.56 " "
Distributor driver	0.60 " "
Distributor operator	0.56 " "

Equipment Rental Cost

The following hourly rates are charged for equipment rental:

Distributor	$2.76 per hour
Two-yard trucks	0.75 " "
Power graders (average)	0.86 " "
Five-ton roller	0.66 " "

The per square yard cost of road-mix low-cost bituminous pavements is based on the following unit prices paid for materials:

Tar per gallon f.o.b. Ann Arbor	$0.0945
Stone per cubic yard on the street	1.45
Pea pebbles per cubic yard on the street	1.45

Of course, these pavements are not a cure-all. For best

results, they should have 4 to 6 inches of compacted gravel below the bituminous wearing surface. Maintenance costs during the past five years have been very low. A total of $2,950 was spent for maintenance on the 498,700 square yards of road-mix surface in service during the 1935-36 fiscal year.

These low-cost pavements are built on petition of the property owners. The city at large pays 100 per cent of the cost of street intersections, and 20 per cent of the frontage costs.

Every year the city receives more petitions for pavements than it can possibly build with its own equipment. Property owners generally agree that it is the best public improvement ever undertaken by the city. The first pavement built is now nine years old and at present is in a good state of repair. From our experience, we have reason to believe these pavements will have a life of from ten to fifteen years or even longer. When a pavement such as these can be built at an initial cost of 26 cents per square yard, no city should be without paved streets.

—From a paper presented before the 1936 Public Works Congress in Toronto.

Stabilized Streets for a Housing Project

Low Cost Enters into Both Streets and Housing Project

THREE and one-half miles of calcium-chloride-stabilized streets now serve the residents of West Acres, a low-cost housing development located nine miles west of Pontiac, Michigan.

From a fund of $850,000, consisting of a gift of $550,000 from the late Senator James Couzens, and a grant of $300,000 by the Federal Emergency Relief Administration, Oakland Housing, Inc., a non-profit corporation, has accomplished its purpose of providing homes that can be bought and paid for by the average industrial worker on a long-term contract.

The homes—150 in number—were built at a unit cost of about $4,400 and have been purchased by workers in the industrial plants of Pontiac. Under the 30-year contract, monthly payments of $25.90 are required, while the 20-year contract calls for monthly payments of $31.75. Each home has six rooms and bath, and an attached garage, and is provided with one acre of land—enough to enable each family to raise some fruits, vegetables and poultry for its own consumption.

The problem of streets resolved itself into a matter of providing, at low cost, a type of surface which affords all weather usage with freedom from dust in summer and rutting in wet seasons. It was decided that the stabilized type of construction should fill these requirements.

The location of streets had been determined when the housing development was laid out, and construction trucks had been routed over definite courses. Hardly more than trails, they at least furnished a guide to the desired contour of the streets.

A local producer of calcium-chloride-stabilized mixture was awarded the contract for street construction, and the work was performed during June, 1936. The stabilized material was trucked to the street sites, dumped, and spread to form a 6-inch loose depth. Compaction to a 4-inch depth was then obtained by routing the material trucks and all other traffic over the freshly laid material. In the street system of 3½ miles, some streets were constructed in 30-foot widths, and others in 20-foot widths.

The supervising officials of West Acres were so greatly impressed with the stabilized streets that it was decided to use the same material on the driveways leading from the street to the garage of each home. A 3-inch compacted depth was used for this purpose.

Since their construction, the streets have been kept in fine condition by light blading after rains. During the summer, however, not a drop of rain fell for six weeks and, despite the exceptionally hot and dry weather, the stabilized streets remained dustless and satisfactory to traffic in every way.

STABILIZED STREET AT WEST ACRES DEVELOPMENT NEAR COMMERCE, MICH.

Scheme to Speed Sidewalk Snow Removal and Keep Gutters Clean

Building Employees to Push Snow to Open Manholes in New York City

SINCE the first announcement of a method devised in New York City to prevent the blocking of gutters by snow removed from sidewalks after the city streets are cleaned, THE AMERICAN CITY has received many requests for further information. Bert Adler, Deputy Commissioner of Sanitation of the City of New York, has kindly furnished the information on which this article is based, and it is hoped that the idea, which has not as yet had a definite tryout—because all of New York's snow thus far this winter has been rain—will prove helpful to other cities.

The scheme is for the Department of Sanitation to cooperate with the owners and managers of improved property to facilitate the rapid removal of snow from the sidewalks and streets by ordering the opening of adjacent manholes and permitting the owners' employees to push the freshly fallen snow into the sewers, thereby facilitating the free movement of tenants, merchandise and the public.

The street cleaners of the Department of Sanitation will open, guard and close the manholes, and open and close the hydrants where water is necessary to flush the snow through the sewers.

In order that owners may be fully protected against damages through accident, by their workmen's compensation and general liability insurance policies, each cooperating owner desiring to work his men in the streets to pan snow into the sewers has been requested to obtain the consent of his insurance carrier by a rider or letter to that effect. No charge has been made to those owners who are known to have received such consents, because the removal of the snow from the streets eliminates a greater hazard than it is thought will exist during the act of removing the snow, on account of the plans for the protection of the employees of building owners while in the streets.

Building Owners Organize

The building owners' representatives are organizing into groups, covering single blocks, bounded by four streets. The captains and their crews from adjacent blocks work together simultaneously in the dividing streets so that streets a block long may be thoroughly cleaned at one time. After a block has been organized, the captain gets in touch with the proper Sanitation Department District Superintendent by calling his extension on the Department of Sanitation main switchboard.

After an investigation by a representative of the Department of Sanitation, safety devices are loaned and stored in a building adjacent to the sewer manholes ready for immediate use. Such devices are cross-bars of iron 24½ inches long to protect the open manhole; red warning flags on short staffs, a 2½-inch water hose, a hydrant wrench and a hydrant pump.

The borough of Manhattan is divided into 15 districts, and each district is under the supervision of a superintendent. The main traffic arteries are cleaned by the Department of Sanitation immediately after a storm. The side streets, however, should have the snow removed while fresh, by the cooperation of all property owners or their tenants who have men available for such work.

The cross streets in New York City are generally rather narrow, and in most cases are one-way streets. The tremendous amount of loading and unloading from parked vehicles on both sides of the streets narrows the available space to one traffic lane. When piles of snow are thrown up from the sidewalk, it completely destroys the loading and unloading areas at the sides of the streets, so that it is felt that the plan outlined in this article will have the complete cooperation of practically all building owners on side streets in the city.

Building owners are urged to take special care to protect the men and the public against accidents while engaged in this work, and each foreman is asked to see to it that his men have dry feet, warm clothing and proper gloves while working on the sidewalks and in the highways. The proper tool to use in pushing snow along the sidewalks and streets is a curved piece of steel 24 inches wide with a handle, with open sides, known as a snow pusher. It is planned that the work shall be done by all neighboring building employees cooperating simultaneously to produce the best results.

The Real Estate Board of New York, through the Chairman of its Snow Removal Committee, Clarence T. Coley, has urged the cooperation of every important property owner in the city.

PUBLIC DEBT IN THE UNITED STATES AND THE UNITED KINGDOM

PER capita debt in the United States, taking into account not only the debt of the Federal Government but also that of the various political subdivisions, totaled approximately $416 as of June 30, 1036. This compares with a total per capita debt of approximately $1,016 in the United Kingdom at the close of the fiscal year 1935. This information and the facts that follow are from a study, "Public Debt in the United States and Abroad," recently completed by the National Industrial Conference Board.

The total public debt of the United States as of June 30, 1936, amounted to an estimated $53,400,000,000. Of this total, the debt of the Federal Government accounted for $33,800,000,000, or 63 per cent, while state and local debt accounted for $19,600,000,000, or 37 per cent.

On March 1, 1935, the latest date for which complete figures are available, the total public debt of the United Kingdom amounted to £9,491,000,000, or approximately $47,455,000,000. The national debt, comparable to the debt of this country's Federal Government, amounted to approximately $39,610,000,000, or 83.5 per cent of the total, while the debt of local political subdivisions amounted to approximately $7,845,000,000, or 16.5 per cent of the total.

Sewage-Works Effluent Attracts Many Fish

Activated Sludge Plant at Monmouth, Illinois, Clears Up Cedar Creek

By THEODORE REED KENDALL
Engineering Editor, THE AMERICAN CITY

ONE of the best recommendations a sewage-treatment plant may have as regards the quality of its effluent is that it attracts fish. The sight of anglers clustered about the old sewage works at Chester, England, 22 years ago gave mute approval of the effectiveness of the treatment. Similarly at Monmouth, Ill., since the operation of the new activated sludge treatment plant was started, in December, 1935, two varieties of fish have come up from Cedar Creek through the open effluent channel and made their homes near the open end of the 84-inch effluent pipe and storm-water diversion outlet.

Monmouth has a population of about 9,000 connected to the sewers, and they pay for the service rendered by sewer rentals proportional to their water bills. A 36-inch sanitary sewer and a new 49-inch storm sewer deliver the waste waters of the community to the plant. A diversion box on the storm sewer permits the overflow of water from heavy rains to the 84-inch reinforced concrete overflow storm sewer 250 feet long to the dredged ditch leading to Cedar Creek. The normal flow of sewage to the plant is from 600,000 gallons to 900,000 gallons per 24 hours. During the excessive dry weather of the summer of 1936 the flow fell to 350,000 gallons daily.

The plant is equipped with three storm overflows. The first is above the screens, the second below the grit chamber, and the third between the primary clarifiers and the aerators. It is the aim to run as much of the waste waters, storm as well as sanitary sewage, through the clarifiers.

Removal of Screenings and Grit

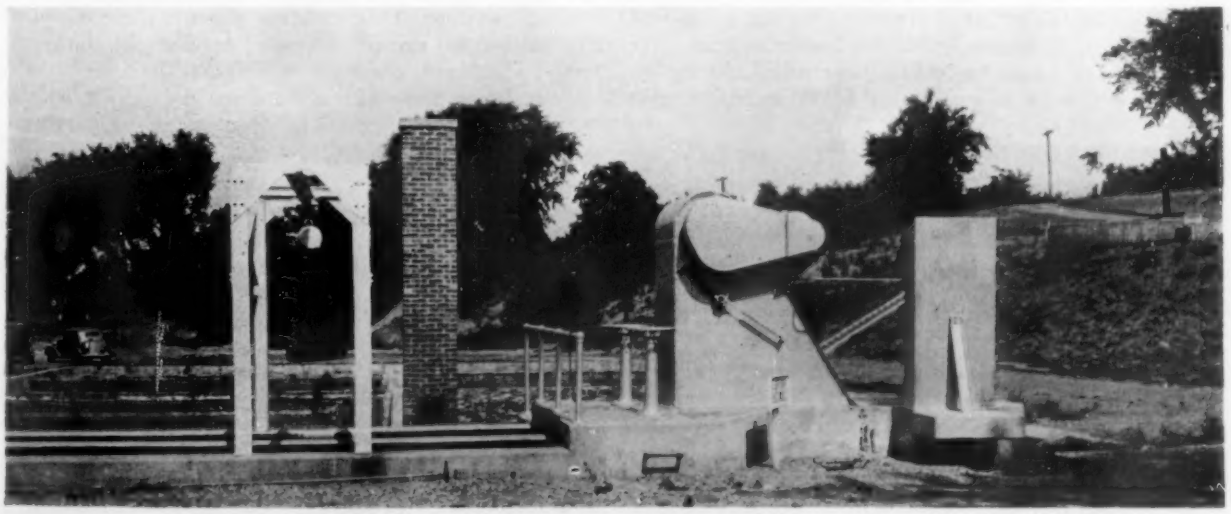
A Rex mechanically raked bar screen set on a slope of 60 degrees removes the coarse material from the sewage as it enters the plant. The rake is automatically controlled by a float-operated mercury switch. The screen bars are 5/16 x 2 inches with a clean opening of 1 inch between. The screenings are left on the draining grid for 24 hours before being forked into the nearby brick incinerator, where they are consumed by the waste gases from the separate digester. During high water, when much trash of a combustible nature and many twigs are brought down the storm sewer, the screenings are burned at once.

The sewage flows to the two grit channels, which are 3 feet wide by 32 feet long and have a flow depth of 3½ feet. They are equipped with a gravel drain for the dewatering of the grit after the channels have been unwatered, but this scheme does not work as well as expected and has been abandoned.

The Primary Clarifiers and Aerators

The sewage is diverted to either of two Dorr clarifiers by a pair of weirs in a channel leading from the grit chambers. The clarifiers are 35 feet in diameter, and 17 feet deep, this being the flow depth of all tanks in the plant. In the curved-side triangle formed by the two clarifier tanks on the effluent side is a scum chamber where the floating scum is collected and removed to the incinerator.

The aeration tanks are in parallel with four Simplex mechanical aerators on either side. The sewage may be run through one or the other side, or through both in parallel, and the aerators are run four on one side at a time. Last winter slight accumulations of ice on the fins of the aerators from the spray occurred as well as on the



THE GRIT CHANNELS WITH GRIT BUCKET, SCREEN INGS INCINERATOR AND REX SEWAGE SCREEN AT THE MONMOUTH, ILL., SEWAGE WORKS

bridge. They were knocked off by light tapping and caused only slight delays in the operation of the mechanical aerators due to overload. It was not necessary to shut down the aerators at any time because of ice conditions.

During the hot weather of the summer of 1936 some trouble was experienced with the operation of one of the clarifiers. This was not the fault of the machine itself, but rather was caused by the delay in getting extra sludge beds ready for the disposal of sludge from the digester. Thus the sludge in the clarifiers could not be pumped to the digester as rapidly as desired, which resulted in septic action in the primary clarifier sludge. It is to the credit of the men in charge of the operation of the plant that they devoted as large a portion of their time as could be spared from the plant operation to the handling of the equipment loaned by the Street Department for the grading of a section of the plant ground, so that the extra sludge beds could be placed in commission as soon as possible.

A total of 144,000 gallons per 24 hours of activated sludge is returned to the aerators with the entering sewage from the clarifiers. The activated sludge is 60 to 70 per cent solids as pumped from the secondary clarifier to the aerators. There are two pumps for this service, located in the basement of the control house, one a 100-gallon and the other a 300-gallon unit. Under the low flow of the past summer a pump of 50 gallons per minute capacity would have been sufficient. The aerators were designed for the handling of a maximum of 1,700,000 gallons of sewage per day, but have worked successfully when the flow was as high as 2,100,000 gallons.

The secondary clarifier is octagonal in shape and 46 feet in diameter. It contains a Dorr clarifier with a suspended metal effluent trough and weir. The plant effluent flows to the channel mentioned, except for a small portion which is diverted to a lozenge-shaped fish pool where goldfish disport themselves amid a luxuriant growth of water lotus. Some trouble has been experienced with the loss of the goldfish by theft.

Sludge Digestion

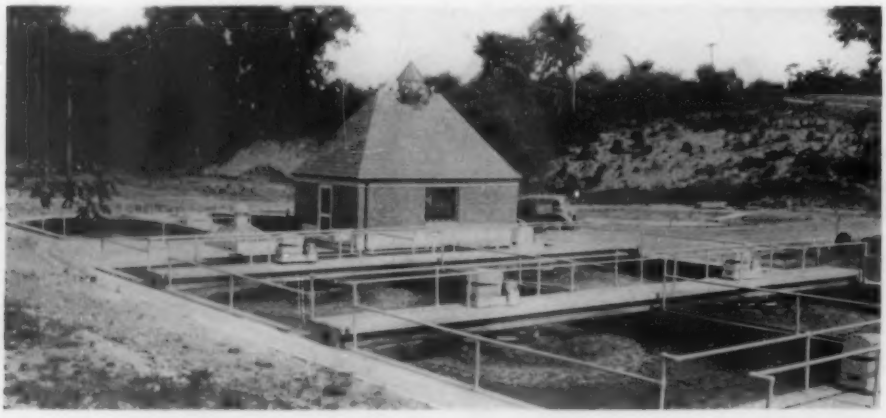
The digestion tank for the raw and activated sludge is a concrete cylinder 40 feet in diameter and 36 feet deep. It is equipped with a Downes floating cover and no stirring device. The digester was slow in getting started producing gas, owing to the time of year that the plant was placed in commission, December, 1935. During the summer, after the foaming of the sludge had been controlled to some degree, the production of gas reached 50,000 to 60,000 cubic feet per day. This is used to heat the water for the digester coils, and during the winter for the heating of the building. The waste gas, as mentioned before, is used for burning the screenings in the incinerator.

The old sewage works on the same site consisted of a series of septic tanks. These were used for the construction of sludge beds. Unfortunately, the tanks were so low that the walls left in place sheltered the sludge and seriously retarded drying. This was remedied by lowering the brick walls, under the direction of the plant superintendent, by men who worked off their unpaid water bills in this manner. The four sludge beds are each 106 feet long by 18½ feet wide and have concrete ramps into them for the trucks used in hauling the dried sludge away for use about the plant and in the city as a fertilizer. The best results in drying have been secured when the sludge was run in about 7 inches deep.

The Control-House Basement

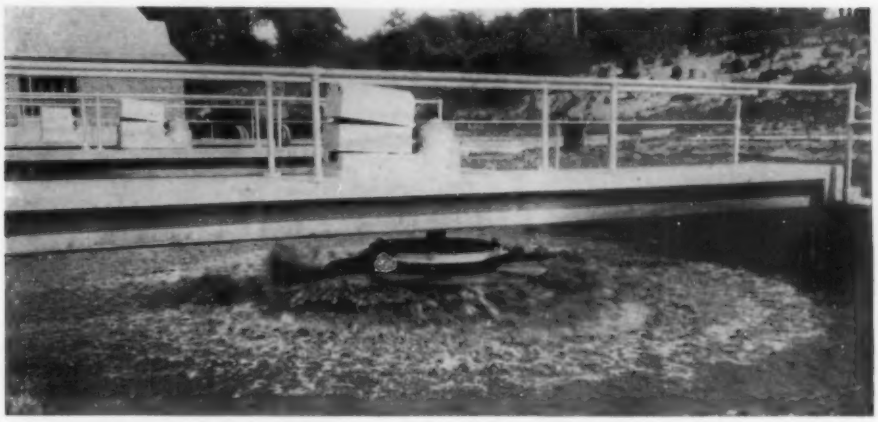
Beneath the control house, where the laboratory and office are located, is a large basement extending under the walk behind the building, where excavation was necessary and backfilling needless. This provides storage space for tools, and eventually showers for the workmen. In addition, all the pumping equipment for the plant is located in one end of the basement. This consists of a Yeomans sump pump with a 1½-inch delivery, an Ames 4-inch delivery double-acting sludge pump driven by a 3-hp Master electric motor; a 300-gallon Yeomans activated sludge pump with a Howell 1.5-hp motor, and a 100-gallon pump with a 0.75-hp motor delivering the sludge to a tank on the floor above, where the flow is divided and continues by gravity. Chapman valves are used throughout the plant for the control of all flows where weirs are not employed.

A Republic flow meter on the sewage effluent gives a constant record of the amount of sewage treated at the plant. A Bryant gas boiler fired by digester gas heats the building and the coils for the digester. A Bristol recording thermometer shows the temperature of the digester at all times. It was consistently low during the early operation, being at 76 most of the time, but as sufficient gas was being produced there was no need for further raising of the temperature. The digester gas is measured by an Emco gas meter and equipped with a washer and flame trap. A Trident meter on the circulating water for the digester coils showed the amount of heat delivered to the sludge to further digestion. The water is circulated by a Worthington circulating pump with a Worthington 1/3-hp motor.



THE MONMOUTH, ILL, SEWAGE-TREATMENT PLANT

From right to left: aeration tanks; control building and laboratory; skylight over pipe gallery; and secondary clarifier



CLOSE-UP OF ONE OF THE SIMPLEX MECHANICAL AERATORS

The plant is equipped with Adaptabels, a device for sounding an alarm when a piece of electric equipment is overloaded. These are mounted on the circuits to the three clarifiers. Lighting shuts off the devices immediately, and the operators have to go to the plant at once during electric storms at night and start not only the clarifiers but the aerators. The plant is fully equipped with Square D switches with push-button switches in the basement and duplicate switches outside at each piece of equipment. On top of the control buildings are three floodlights, so spotted that they illuminate all of the plant at one time.

The plant has been in charge of W. O. Hayes, Superintendent, and W. P. Merwin, Assistant Superintendent, since it was started, in December, 1935.

New Pipe Line in Swamp Meadows

A 48-Inch Water Line for Bayonne, N. J., Supply

THE city of Bayonne, N. J., obtains its water supply from the Wanaque Reservoir, near Pompton Lakes, N. J. The chief problem in the transportation of the water to Bayonne is not the transmission line through the rolling hills of northern New Jersey, nor that portion of the lines existing in the corporate limits of Bayonne. The problem is in the comparatively few miles existing between North Arlington and the city of Bayonne, where the pipe passes through swamp-like soft meadowland through which the Passaic River on the west and the Hackensack River on the east meander toward their outlets in New York Harbor. This swampy area is commonly known as the Hackensack Meadows.

Such filling-in as has taken place on the Hackensack Meadows is hydraulic fill from the Passaic River with an admixture of cinders derived from industrial plants, with the result that the meadow possesses a corrosive menace to sub-soil metallic structures quite out of keeping with its tranquil appearance. Pipe lines have been laid across it in the past with disastrous results because of rapid deterioration through corrosion, and only cast iron has withstood this attack satisfactorily.

In 1896, the city of Bayonne laid a pipe line across these meadows. Part of the line was of cast iron and part of other material. In 1920, a change in location was made for part of this line. The cast iron pipe was salvaged, except for the submarine crossing of the Hackensack River, which was abandoned owing to the difficulty and cost of its reclamation, but the remaining portion of the pipe, which had to be relocated, was abandoned because of its condition. A new submarine river crossing was made, using twin pipe lines of cast iron, which is still in service.

The most interesting line is the big 48-inch feeder which extends from North Arlington down Belleville Turnpike and then down the Lincoln Highway and over to its tie-in with the river crossing. The portion of the feeder line along Belleville Turnpike does not have to contend with any bad soil conditions, but from a point a few hundred feet north of the tracks of the Pennsylvania Railroad to the tie-in with the river crossing the soil conditions are exceedingly bad. Cinders have been used to form the Central Avenue grade, and the bordering industries are built on fills, largely cinder in origin, while between the two the salt tide rises and falls regularly.

This 48-inch line was laid in 1921 and was scrapped in 1936 because of the corrosive attack on the material of the pipe in this area. To replace this pipe, a 48-inch cast iron pipe was installed extending from the Lincoln Highway to a point of the Pennsylvania Railroad tracks where it ties in with the original line. In laying it, a trench was first excavated in the soft, marshy soil, which rapidly filled with water. A twin row of piles was driven to grade, and on the tops of these piles, which are spaced about 12 feet apart longitudinally, a bent of concrete was poured. The pipes rest on these bents, there being one bent to each length of pipe. Trenching and backfilling were both done with a clamshell bucket, and the pipe was laid with a tractor crane and the joints made up with lead.

This installation was designed and supervised by Walter L. Clarkson, City Engineer of Bayonne, the work being done by contract by Joseph L. Sigretto and Sons, Inc., of Rutherford, N. J. Part of this 48-inch cast iron pipe was supplied by the United States Pipe and Foundry Co.

Why King City Woke Up— and What Happened

By RUSSEL ESTEP

WHEN word came from Sacramento that the State Highway Department had decided to shorten U. S. Route 101 between San Francisco and Los Angeles, and cut out King City, the town suddenly woke up.

Previously it had been just another small western town, with its narrow main street, angle parking and old I.O.O.F. building on Broadway. Along the main street, on which the highway travel passed, were numerous utility company power poles, intermingled with telephone poles, both of which helped support, in a haphazard way, the street lamps which were swung at the end of each block directly in the center of the intersection.

Most of the town's 1,400 population depended, either directly or indirectly, upon the tourist trade. Surrounding the town are several ranches, each of a thousand acres or more. Directly west of it is the 150,000-acre ranch of William Randolph Hearst, with his home on the southern end of the ranch, forty miles south of King City.

Many of the town officials had been elected over and over again, without particular thought that they might do anything to increase the town's welfare. They had been raised in the town, and they considered anyone not born there, a foreigner. Most of them were large property owners, and regardless of how they had cooperated in the past they were quick to realize that something must be done, and at once.

A mass meeting was called. It was decided that an extreme effort must be made to keep the highway where it was. Pressure must somehow be brought to bear on the proper authorities, and perhaps, after all, it might not be too late. A petition was immediately circulated, signed by nearly every resident, asking that the highway be left through the town. This was forwarded to the State Highway Department, and at the same time the local Women's Club, the Rotary Club, and the Chamber of Commerce instructed their respective secretaries to write to Sacramento protesting against the changing of the highway.

The Highway Department responded by sending an engineer to King City to investigate. He called on local merchants and business men. He had been instructed to tell them that the highway might be left as it was, providing the city would widen the main street where the highway passed through and adopt parallel parking along it. This would allow faster travel and would partly offset the extra miles the motorists were required to travel.

A special election was called, and the City Council was authorized to raise $9,000 by extra taxation. The Federal Government was asked to furnish labor, and this came from a nearby WPA project.

Work was begun in February and, although hampered by occasional rains, the men had 3 feet removed from the sidewalk width and new curbing installed by the end of April, 1936. This work caused all the gasoline stations to move their underground storage tanks, which was done at their own expense. In some cases, however, the labor for this work was furnished by the Government.

With 3 feet off the sidewalk on each side and parallel parking in effect, the street seemed to have been widened much more than it actually was. There was still money in the treasury, so new lighting standards were purchased and installed every hundred feet on each side, and the utility companies cooperated by removing their power poles to a back alley and serving the business houses from the rear instead of from the front. Later, when these changes were viewed by the highway engineers, the city was officially notified that the highway would be left through the town.

However, improvements were not to stop. The bug of modernization had bitten the greater part of the population. A Boosters Club was formed, with about 200 members. The town had no swimming pool and no park of any kind. Youngsters were obliged to drive 40 miles to a ranch and pay 50 cents to swim in the only place where the creek was deep enough.

To get money for a swimming pool and a park in the town, the Boosters Club, working with the Chamber of Commerce, organized a rodeo. Letters were written to riders asking them to compete, and when enough entries were assured, work was started on corrals for the stock. These were built by local boys in their spare time, and seats were rented from a passing circus. Riders were required to put up $10 each for the privilege of riding, and this formed a purse which was given to the winner of each event. Thus the riding financed itself. Five dollars was paid for the use of each animal during the show. Members of the Boosters Club sold tickets at the gate, and several hundred dollars was raised in this way. Others sold soft drinks and beer to the spectators. Enough money was raised for the park, and half enough for the pool. Another rodeo is planned for next summer, and after that is over, both the pool and the park will be assured.

The Mayor had a small wooden building erected near the center of town, and a vigilant committee from the Boosters Club occupied it as an information bureau for the benefit of tourists at the time of the rodeo. Many of them stayed over to see the show. Altogether, it was estimated that the rodeo brought around $50,000 into the town, to the benefit of the business houses.

With the swimming pool and park assured, interest has been shown in a new civic auditorium. That it will be secured is probable.

No new houses had been built in the town during the depression years, but since the awakening 64 houses have been built, this during the past seven months.

It took quite a jolt to get the citizens started, but now that they are on the way, there's no telling how far they will go. Westerners seem to be that way.

Cutting Legal Tangles to Get a Water Supply

How the Boroughs of Collegeville and Trappe, Pa., Acquired Water-Works Systems

By FRANK D. PETERSEN
Costa and Petersen, Engineers, Philadelphia, Pa.

THE neighboring boroughs of Collegeville and Trappe, Pa., among the oldest in the state, until recently were forced to obtain their water supplies from individual shallow wells. Their tax problems, the legal problems involved, and the source of water supply itself, all created a situation that just wouldn't hold water. A way was found out of the difficulty, and now they have their water-works systems.

The Problem

The two boroughs extend for about 2.5 miles along State Highway 442, about 6 miles north of Norristown, Pa. About 85 per cent of dwellings and other structures in both boroughs front on this 50-foot highway, which is paved with a 12-inch slab of concrete. Ursinus College, in Collegeville, has a frontage of about 0.25-mile, and created a financial burden, since this extensive tax-free frontage increased the cost of the water-distribution system to the taxpayers.

Scattered wells furnished water for the two communities, but these wells became contaminated from polluted surface drainage and ground water and were condemned by the State Department of Health. Early in 1935 the Borough Councils met in joint sessions and arranged to apply for a PWA grant of 45 per cent of the overall cost of a joint water-works system. The statutes and court decisions of the Commonwealth of Pennsylvania showed that it was impossible to build a joint water-works system. The Harvey Water District Law, passed in 1931, and intended to provide for such contingencies, had been declared unconstitutional in Luzerne County, and it was found that the Borough Code of Pennsylvania made no provision for the building of a joint water-works system by two or more municipalities.

The Solution

For a time a legal solution seemed impossible, but the following plan was evolved, dividing the project into three parts:

1. A joint water-pumping plant would be built, owned and operated by the two boroughs and managed by a joint commission. This would be paid for out of the 45 per cent Federal grant.

2. A complete distribution system for the borough of Collegeville would be built by that borough and managed by the proper borough officials, being paid for from a sale of borough bonds.

3. A complete distribution system would be built for the borough of Trappe, to be owned by that borough and managed by the proper borough officials and to be paid for from the sale of borough bonds.

This plan was adopted as the only one by which the two boroughs could obtain their water supply from a jointly owned and operated pumping plant. The PWA grant was sufficient to pay for the pumping and storage system with the wells and still leave a sum of money which was prorated between the two boroughs to aid them in building their respective distribution systems.

The Water Supply

This section of Pennsylvania is underlaid with a stratum of Brunswick shale about 2,000 feet in thickness. Wells within a radius of 5 miles were not very promising, and a yield of 50 to 60 gpm was about the greatest which could be expected. The first well, 8 inches in diameter, was drilled to a depth of 255 feet and yielded 250 gpm after continuous pumping for 26 hours without dropping below the initial drawdown level. A second well, also 8 inches in diameter, was located about 200 feet to the south of the first well and drilled to a depth of 275 feet, yielding 125 gpm on continuous pumping.

Each well is equipped with a 150-gpm Pomona vertical turbine pump driven by a 7.5-hp motor. The well enclosures or houses consist of three walls of precast concrete blocks, 2 batten doors hung on hook hinges, and a wooden hatch roof. The roof and the doors are easily removed, permitting ready access to the motor and pump for inspection. The two well pumps discharge into a covered steel clear basin, 12 feet in diameter by 12 feet high, lo-

A DEEP-WELL PUMP HOUSE, SHOWING THE REMOVABLE ROOF FOR WITHDRAWING PUMP

END VIEW OF PUMPING STATION, CLEAR BASIN AND ELEVATED STORAGE TANK OF THE BOROUGHS OF COLLEGEVILLE AND TRAPPE, PA.

cated immediately in back of the pump house. The pump house measures 20 x 35 feet and is built of precast concrete blocks. The roof is covered with asbestos shingles, making the building practically fireproof. A garage 10 x 20 feet occupies one corner of the building.

Two Allis-Chalmers single-stage, double-suction centrifugal pumps, driven by Allis-Chalmers 10-hp motors located in the pump house, take their suction from the clear basin and pump the water through 1,600 feet of 6-inch diameter force main into the distribution systems. The tank tower has a capacity of 200,000 gallons and measures 38 feet in diameter by 27 feet deep. Its hemi-ellipsoidal bottom is 110 feet above grade. The pumping station is entirely automatic, for the well pumps are controlled by a float switch, and the booster pumps by altitude controllers.

The water is sterilized by means of two heavy-duty Chloro-o-Feeders. The terminals of the motors of these two small pumps are connected across the leads of the well pumps, so that whenever a well pump starts, a Chlor-o-Feeder starts automatically. The sterilized water is discharged into the clear basin, so as to obtain complete mixing. Cement-lined de Lavaud cast iron bell-and-spigot pipe was used throughout the entire system.

Plans and specifications were prepared by Costa and Petersen, Inc., engineers, Philadelphia, Pa. Bids were opened on January 1, 1936, and a contract awarded to the F. H. Keiser Co., Pottstown, Pa. The system was designed so as to conform strictly to the requirements and regulations of the Pennsylvania Department of Health and the National Board of Fire Underwriters. Harry M. Freeburn, District Engineer of the Department of Health, and Robert Goodhue, Engineer of the Rating Bureau, closely cooperated with the engineers at all times.

Progress of Council-Manager Government

CONDUCT of municipal affairs under the council-manager plan of government is now in vogue in 459 cities of the United States and other parts of the world, according to a bulletin just issued by the International City Managers' Association summarizing developments during the two-year period 1935-36. Four hundred forty-four of the cities and 7 counties under the system are in this country.

A total of 19 cities and 1 county adopted the council-manager system in 1935 and 1936, the summary indicates. Sixteen of these cities range in population from 1,000 to nearly 25,000. Three are over the 50,000 mark, and the county—Monroe County, N. Y.—has a population of 423,881. Only one city abandoned the plan by vote of the people last year, and during the whole five-year period from 1931 to 1936 inclusive, only six cities, one town, and one village made this decision.

Nearly one city in every five of those over 10,000 population in the United States is operating under council-manager government, it is found, although ten states have neither statutory nor constitutional provisions under which cities may adopt the council-manager plan without first securing specific legislative consent. These states are Connecticut, Delaware, Florida, Georgia, Idaho, Indiana, Maine, Mississippi, Rhode Island, and West Virginia. States in which certain cities can adopt the manager plan are Alabama, Louisiana, Maryland, Nevada, New Hampshire, Utah, Washington and Wyoming. No city in any of these states, however, has done so.

At present, 36 states have manager cities. Michigan heads the list with 46. Virginia, with three council-manager counties, shows 38 cities as well. Texas and Florida have 37 each; and other states show from 1 to 33. Among the large cities functioning under council-manager government are Cincinnati and Toledo, Ohio; San Diego and Oakland, Calif.; Kansas City, Mo., Schenectady, N. Y., Oklahoma City, Okla., Knoxville, Tenn., and Dallas, Texas.

The city-manager plan was first adopted by Staunton, Va., in 1908. Its acceptance in the past twenty years has been contemporary with the decline of the commission plan. For two years now there have been more council-manager cities in the United States than commission-governed cities in cities over 10,000.

Activity for council-manager government is currently in the air in at least three states. Hamilton County (Chattanooga), Tenn., is working on a county-manager bill which is to be introduced in the present session of the Tennessee Legislature. Under auspices of the City Club of Chicago a proposed city-manager enabling act will be introduced in the present session of the Illinois Legislature. In Nebraska a county-manager enabling act, declared unconstitutional by the State Supreme Court upon previous passage, is being resubmitted to the Legislature.

The City and the Utilities Get Together

A Joint Committee in Toronto Decides Upon Best Measures to Protect All Pipes and Cables

By R. C. HARRIS
Commissioner of Works, Toronto, Ontario

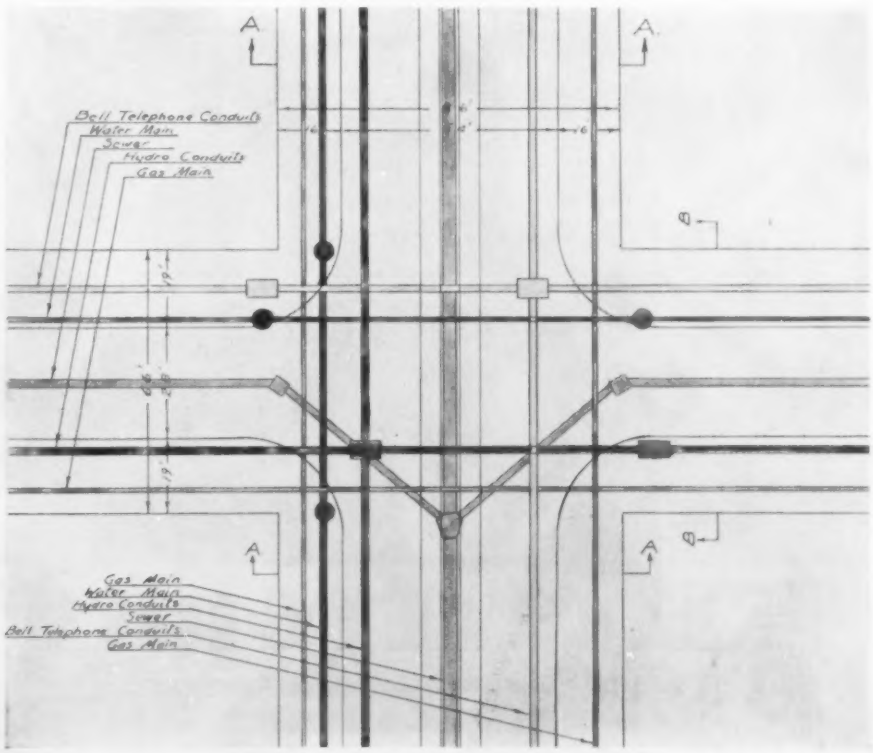
ALMOST successful cooperative effort has been under way in Toronto for nearly five years, aimed to iron out existing misunderstandings and prevent new and costly errors in the location and maintenance of municipal and privately owned underground services. The group which acts as the clearing house is known as the Public Utilities Coordinating Committee of Toronto and includes representatives of all the local utilities and the Department of Works. This Committee meets on the third Monday of each month at the City Hall and receives a monthly report showing the progress of preparation of plans, and reports from the Sub-committee, and discusses matters of policy.

The Sub-committee, having practically the same personnel as the main Committee, meets the first Monday of each month in the City Hall. It deals with all matters referred to it by the main Committee, and discusses such engineering problems as the best method of proper protection when utilities are laid close together, or poles located over underground construction, or the method of backfilling trenches and tunnels. It prepares recommendations for the consideration of the main Committee regarding the layout of standard plans, the change of location where utilities interfere with each other, and a multitude of other matters in which a conflict of interest might cause misunderstanding. When the city administration has approved pavement widenings, the construction of new pavements, or bridges, the Committee is notified immediately so that the various utility companies may plan their underground construction accordingly.

When any public utility company wishes to place underground construction in the city streets, application is made to the Department of Works, which notifies the various utility companies of the proposed locations. If any location interferes with any of the utilities, the Department of Works is advised, and the utility company making the application is requested to submit another location. When an excavation is being made by a utility company, and the underground construction of another utility company is uncovered and found to be in a location other than that shown in its records, it is immediately notified so that the plans may be corrected.

Detailed Plans of Underground Structures

The type of plan referred to was determined upon by the Committee only after extensive investigation and discussion, and was designed essentially to indicate the location and elevation of all underground construction. For this purpose a map of the city was divided into its original con-



SECTION OF A PLAN FOR THE LOCATION OF SUBSURFACE UTILITIES FOR THE INTERSECTION OF A 54-FOOT PAVEMENT ON AN 86-FOOT STREET, WITH A 28-FOOT PAVEMENT ON A 66-FOOT STREET

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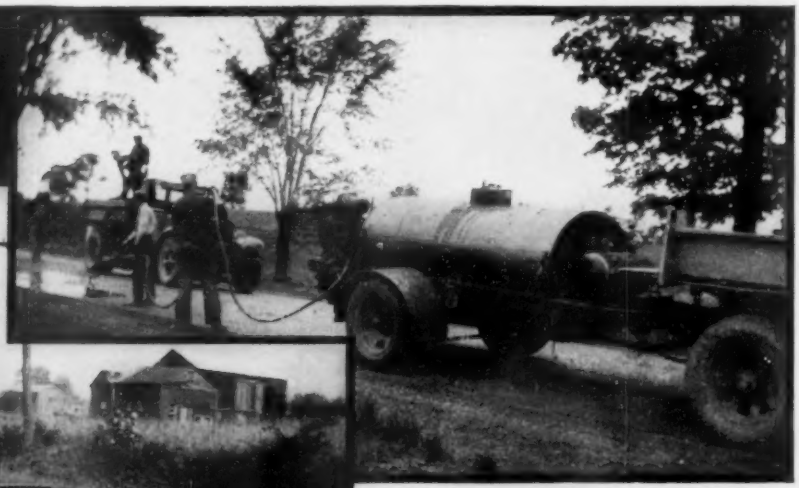

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cession areas, approximately 1¼ miles square. These areas are numbered consecutively. The concession areas are, in turn, divided in two, and designated A and B, and each half is divided into approximately 100 rectangles. The dimensions of the rectangles are approximately 400 feet by 600 feet. A detailed plan is prepared of the rectangles, and on completion each is given its individual number, e.g., 4-B-3. A survey of surface and sub-surface construction, including all areas situated within street lines as an adjunct to buildings and other structures, is made by the Roadway Section, and a preliminary plan is prepared, drawn to a scale of 20 feet to 1 inch, together with a cross-section of the street drawn to a scale of 10 feet to 1 inch. These plans are forwarded to the various utility companies to locate their underground construction on the plan and cross-section according to scale, after which they are returned to the Roadway Section and tracings made. White prints are taken and the construction of the various utilities is indicated in a color allotted to each. These are filed in binders and kept in the City Hall for future guidance. Uncolored prints are supplied, at cost, to any utility company, on request.

For future guidance five ideal standardized plans were prepared and adopted by the Committee covering street and pavement layouts of different widths. Thus in the future when a new area is developed or all the underground structures must be replaced, the standardized plans will guide the replacement of all underground utilities.

Since the Committee has been formed, there has been greatly increased cooperation, and marked mutual benefit has been clearly demonstrated.

CITY OF TORONTO DEPARTMENT OF WORKS—ROADWAY SECTION LOCATION AND DEPTH OF UNDERGROUND CONDUITS, GAS, WATER AND SEWER LINES

Utility	N. & S. Streets	Depth	E. & W. Streets	Depth
28-Foot Pavement—66-Foot Streets. Plan S-1				
B. T. conduit	16′ W. of ESL	2′ 0″	9′ to 10′ S. of NSL	2′ 0″ x
Gas main	6′ W. of ESL	4′ 0″	6′ N. of SSL	4′ 0″
Hydro conduit	9′ to 10′ E. of WSL	2′ 0″	16′ N. of SSL	2′ 0″
Water main	17′ E. of WSL	5′ 6″	17′ S. of NSL	5′ 6″
46-Foot Pavement—66-Foot Streets—Plan S-2				
B. T. conduit	16′ W. of ESL	2′ 0″	16′ S. of NSL	2′ 0″
Gas main	6′ 0″ W. of ESL	4′ 0″	6′ 6″ N. of SSL	4′ 0″
Hydro conduit	16′ E. of WSL	2′ 0″	16′ N. of SSL	2′ 0″
Water main	5′ 0″ E. of WSL	5′ 6″	5′ 6″ S. of NSL	5′ 6″
32-Foot Pavement—66-Foot Streets—Plan S-3				
B. T. conduit	14′ W. of ESL	2′ 0″	9′ S. of NSL	2′ 0″ x
Gas main	6′ W. of ESL	4′ 0″	6′ N. of SSL	4′ 0″
Hydro conduit	9′ E. of WSL	2′ 0″	14′ N. of SSL	2′ 0″
Water main	15′ E. of WSL	5′ 6″	15′ S. of NSL	5′ 6″
54-Foot Pavement—86-Foot Streets—Plan S-3				
B. T. conduit	22′ W. of ESL	2′ 0″	22′ S. of NSL	2′ 0″
Gas main	6′ 6″ W. of ESL	4′ 0″	6′ 6″ S. of NSL	4′ 0″
Gas main	6′ 6″ E. of WSL	4′ 0″	6′ 6″ N. of SSL	4′ 0″
Hydro conduit	22′ E. of WSL	2′ 0″	22′ N. of SSL	2′ 0″
Water main	11′ 6″ E. of WSL	5′ 6″	11′ 6″ S. of NSL	5′ 6″
N. & S. 28-Foot Pavement, E. & W. 48Foot Pavement—66-Foot Street—Plan S-4				
B. T. conduit	16′ W. of ESL	2′ 0″	16′ S. of NSL	2′ 0″
Gas main	6′ W. of ESL	4′ 0″	5′ 6″ N. of SSL	4′ 0″
Hydro conduit	9′ to 10′ E. of WSL	2′ 0″	16′ N. of SSL	2′ 0″
Water main	17′ E. of WSL	5′ 6″	5′ 6″ S. of NSL	5′ 6″
N. & S. 48-Foot Pavement, E. & W. 28-Foot Pavement, 66-Foot Street—Plan S-4				
B. T. conduit	16′ W. of ESL	2′ 0″	9′ to 10′ S. of NSL	2′ 0″ x
Gas main	5′ 6″ W. of FSL	4′ 0″	6′ N. of SSL	4′ 0″
Hydro conduit	16′ E. of WSL	2′ 0″	16′ N. of SSL	2′ 0″
Water main	5′ 6″ E. of WSL	5′ 6″	17′ S. of NSL	5′ 6″
N. & S. 28-Foot Pavement, 66-Foot Street, E. & W. 54-Foot Pavement, 86-Foot Street—Plan S-5				
B. T. conduit	16′ W. of ESL	2′ 0″	22′ S. of NSL	2′ 0″
Gas main	6′ W. of ESL	4′ 0″	6′ 6″ S. of NSL	4′ 0″
Gas main			6′ 6″ N. of SSL	4′ 0″
Hydro conduit	9′ to 10′ E. of WSL	2′ 0″	22′ N. of SSL	2′ 0″
Water main	17′ E. of WSL	5′ 6″	11′ 6″ S. of NSL	5′ 6″
N. & S. 54-Foot Pavement, 86-Foot Street, E. & W. 28-Foot Pavement, 66-Foot Street—Plan S-5				
B. T. conduit	22′ W. of ESL	2′ 0″	9′ to 10′ S. of NSL	2′ 0″ x
Gas main	6′ 6″ W. of ESL	4′ 0″	6′ N. of SSL	4′ 0″
Gas main	6′ 6″ E. of WSL	4′ 0″		
Hydro conduit	22′ E. of WSL	2′ 0″	16′ N. of SSL	2′ 0″
Water main	11′ 6″ E. of WSL	5′ 6″	17′ S. of NSL	5′ 6″

x—Depth 1′ 6″ in boulevards.

Note: E. & W. B. T. under N. & S. hydro at intersections. E. & W. Hydro under N. & S. B. T. at intersections. B. T. —(Bell Telephone).

The above locations shall apply in all cases when possible. Departure therefrom may be permitted where locations cited are not practicable, and with the approval of the Commissioner of Works.

Plant Extension Approved By Jacksonville City Commission

THE City Commission has unanimously approved recommendations that we no longer postpone making necessary extensions to the municipal electric plant, in accordance with my letter to the Council on November 20, 1936, as follows:

Several months ago the city of Jacksonville made application to the Federal Government for funds to make certain extensions to the electric plant and distribution system. We have been able to get approval of a grant of $1,127,000, which is 45 per cent of the estimated cost of the extensions.

The engineers who made the survey of the electric department in 1934 recommended that a new turbine and boilers be installed at the plant when our peak load reached 29,000 kw. This peak has been reached, and exceeded by 1,500 kw, and it is anticipated that before the end of this year the peak will go as high as 32,000 kw, which is 3,000 kw greater than the maximum peak set by our engineers. In addition, many of our customers, including several hotels, are now anticipating the installation of air-conditioning equipment; several of our industries are changing from steam to electric power; and our load is increasing at a rate far beyond expectations.

It will take from twelve to eighteen months to install the turbine and boilers, and in my opinion we should not delay this matter any longer, and should make preparations at this time to secure the necessary funds to match the Federal Government's grant of $1,127,000, when it is ready to allocate funds for this purpose. I therefore recommend to the Commission that we request the City Council to issue certificates for $1,250,000, to be paid out of the earnings of the electric department, at the rate of $100,000 each year for 11 years, and $150,000 on the twelfth year.

This money can be repaid without any reduction of our transfers to the General Fund, because the revenue is increasing very satisfactorily, and from the reports in the City Hall, our revenue this year will exceed our estimated revenue by approximately $250,000.

E. E. Anders,
Commissioner of Public Utilities, Jacksonville, Fla.

Water and Fire Department Improvements Lower Insurance Rates

TANGIBLE evidence from municipalities in four widely separated states—Texas, Virginia, South Carolina and Ohio—of savings in fire insurance rates resulting from expenditures on better water works and improved fire-fighting facilities has been presented in a recent statement by the Public Works Administration.

In Texas alone, 20 communities, either by improving their water-works facilities or their fire-fighting facilities, had reduced their insurance rates per thousand on an average from 66 cents to 45 cents. One community, Big Sandy, enjoyed reductions from $1 to 53 cents per thousand. Another, Naples, was given insurance rate reductions from 98 cents to 47 cents per thousand.

Figures from the other three states show that in the communities where water works have been built, rates dropped as much as 50 per cent on homes. Previous rates in South Carolina were so high that the yearly saving to a home owner or merchant in reduced fire insurance premiums because of PWA improvements in many instances will be as much as the entire annual water bill.

In 28 communities or towns in South Carolina, the insurance rates on brick and tile buildings dropped 34 per cent, and on mercantile frame buildings 10 per cent. The reduction on brick dwellings insurance cost in these communities was 43 per cent, and 36 per cent on frame homes.

In 12 towns of West Virginia, the reduction on mercantile building insurance amounted to 24 per cent for brick construction and 16 per cent for frame construction.

In Ohio, 17 PWA water works have been completed. In the case of brick residential dwellings, there is as much as 50 per cent saving in the fire insurance rate, and in the frame structures, the reduction has reached a maximum of 43%.

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Better Refuse Disposal Service at Less Cost

Tucson, Arizona, Uses Waste Tin Cans to Produce Deodorant for the City Sewers and also Sells Them for Copper Recovery

By JOSEPH C. COYLE

IN these days of constantly mounting costs of administration, from city to national government, news of a city department which has, over a period of years, materially lowered its cost rate, while improving and increasing the service rendered, will be welcomed to those interested in such problems. While not boasting a pretentious incinerator and equipment, garbage collection and disposal in the city of Tucson has shown this trend for several years. Although the services rendered to approximately 40,000 residents of the city, and to large suburban areas as well, have increased year by year, official figures show that the cost of collection and disposal, which was $3.49 per ton in the fiscal year of 1930-31, was reduced to $1.75 per ton during the fiscal year of 1934-35. Meanwhile the tonnage had increased from 14,384 to 16,761, and the rate of pay for laborers had increased 33 per cent and that of drivers 15 per cent. Cost of collection dropped from $2.94 per ton to $1.45; that of incineration from 89 cents to 49 cents, and the actual cost of labor from 34 cents to 19 cents per ton.

Motorized Collection

The first two garbage trucks were added to horse-drawn equipment in 1927, and by 1931 the service was entirely motorized. Improvements to truck bodies and the system of collection, between the years 1931 and 1934, brought much better service at greatly reduced cost. Eight 1½-ton Ford, International and Studebaker trucks, with 5-cubic-yard watertight steel bodies, are in use. The trucks used for garbage collection are equipped with swinging gates, 24 inches from the front end of the bed, which retains ashes loaded therein while the garbage is being dumped. The ashes are then hauled to the dump-ground, adjacent to the incinerator plant. The trucks are equipped with Wood hydraulic hoists beneath the bodies. The sides of the bodies are not more than 5 feet from the ground, which facilitates the dumping of containers. Each truck has a driver and a helper, with an extra helper on Mondays and Tuesdays. The men work six hours daily, except Sunday. The city is divided into thirteen collection districts, and collections are made three times a week, except in the two districts comprising the business section, where collection is daily except Sunday.

All garbage, ashes, yard rakings and tree trimmings are collected without special levy on residents. Residents are requested to line garbage cans with paper, to keep the inside clean, and keep down flies. Garbage, tin cans, bottles, etc., are required to be placed in a metal container with a tight lid, and holding not more than 16 gallons. Tree trimmings are collected by a special truck, when the Department is notified. A record of the location is given in duplicate to the driver and to the office, so the driver's report of collection can be checked. All trucks are equipped with canvas covers for the body. Drivers and foremen make out time cards for themselves and their helpers. A record of each truck is kept at the city shop, showing mileage, amount of gasoline and oil, date greased, tire mileage and all repairs. The practice of investigating each complaint, and handing the driver a copy of it, has been ef-

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25 more Indian Motorcycles for Illinois State Maintenance Police

ILLINOIS *prefers* Indian

The Illinois State Maintenance Police are famous from Coast to Coast for their morale, spirit and efficiency. A team of officers from this crack organization, equipped with Indian Motorcycles, took top honors for performance against all competition at the 37th National Encampment of the Veterans of Foreign Wars at Denver, Colorado, last September. Illinois operates approximately 250 Indian Motorcycles—one of the major factors in the remarkably high efficiency of this force.

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fective in cutting down complaints to about 8 in 150,000 monthly services.

The Incinerator

The two-story brick incinerator is on the bank of the Santa Cruz River, 3.5 miles from the most distant point of collection. It has a concrete tile roof and concrete floors, the second, or charging floor being reached from either end of the building by easy earthen ramps. On the ground floor are the two rectangular furnaces, each with a hearth area of 11 by 18 feet and three sets of shaking grates, through which a maximum amount of air reaches all parts of the furnace. Gases all pass through the combustion chamber before entering the rectangular flue leading to the brick chimney. Furnaces and flues are lined with firebrick, insulated with Sil-O-Cel and backed up with common brick. The roof of each furnace is a continuous brick arch, held in place by steel buckstays. A steel pan for burning dead animals replaces the rear half of the middle grate in furnace No. 1.

The first unit of the plant was constructed in 1923, at a cost of $21,897.51. In 1927 a second unit was added, at a cost of $27,349.75. Garbage, trash, cans, bottles, etc., are dumped on the charging floor and shoveled through three 36-inch openings in the roof of each furnace, connected with similar openings in the charging floor. Covers to the double openings are handled with two Yale hand hoists on overhead trackage above the No. 1 furnace, and by an electrically operated one-ton Yale hoist over the No. 2 furnace. Paper and other easy-burning material is placed farthest from the combustion chamber, so the hot flames will aid in dehydrating wet garbage. Occasionally, waste oil collected from garages is used during wet weather. Ashes are raked out on the ground floor and hauled to the dump along the bank of the river nearby.

A foreman and two helpers, and a teamster, who hauls the ashes, cans, etc., are the regular crew at the plant. A record is kept of each load brought in, showing the time delivered, number of the truck (if it is a city truck), the name of the driver, and a list of the dead animals, if any. Every month the garbage is weighed over a period of two or four days, to get the average weight. Services of the incinerator include the handling of material, without charge, from a number of commercial organizations which have their own regular trash trucks, as well as from South Tucson, the United States Veterans' Hospital, and other suburban institutions. H. O. Jaastad is Mayor of Tucson. George W. Seeley is City Engineer, and L. R. Burch, Street Commissioner.

Uses for Tin Cans

The burned tin cans are raked out and hauled to the inland side of the waste dump, from which they are later taken and baled in a specially built press, driven by a belt from a 20-hp U. S. motor, and with a capacity of about 5 tons in 8 hours. Though loosely compressed, the cans cling together and require no ties. They are sold to copper mining companies for use at their leaching plants, to recover copper suspended in water. The cans must be burned to remove the tin from the iron, and loosely pressed so that there will be more surface exposed to action of the copper-bearing water. This method of recovering copper is said to be a valuable aid to American copper companies in competing with cheap foreign copper.

About 75 pounds, per day, of the burned tin cans from the city incinerator are being used by the Tucson Health Department in the manufacture of ferrous chloride for deodorizing the city sewer lines. A plant for the purpose has been constructed at the city shops. A chlorinous solution from a Wallace-Tiernan unit is introduced into the bottom of a concrete reaction tank holding 900 gallons. This tank is kept filled with the tin cans, which are flattened before placing them in the tank. While a short period of retention causes the combination of iron and chlorine to form ferric chloride, a coagulant, longer retention results in ferrous chloride, a valuable deodorant.

Odors emanating from a siphon on the sewer line, under the Santa Cruz River, as well as from the sewage plant, had caused complaint. Also, peculiarities in the sewage from the United States Veterans' Hospital caused rapid deterioration in the concrete line leading from the hospital to the city sewer, and a vitrified pipe had to be installed. Installation of the ferrous chloride plant over the hospital line, and the introduction of approximately 2,400 gallons per day of the liquid to the sewer through it, has shown excellent results in control of these conditions, according to George Marx, Sanitary Engineer of the Health Department. Experiments are still under way by the Department, looking to further efficiency and economy in eliminating hydrogen sulfide odors from the city's sewer system. A second reaction tank is contemplated, to be used in conjunction with the one already in use in lengthening the retention period. Trial and experiments so far indicate, according to chemists of the Department, that still greater efficiency in odor control will thus be attained. These experiments are said to be among the first of the kind to be made in this country.

Engineering Show and Discussions at Johns Hopkins This Month

THE Johns Hokpins School of Engineering will celebrate its twenty-fifth anniversary this month with a three-day series of events which will include a diversified Engineering Show. Opening on February 19, the exhibit of technological advances may be visited between other features of the program, which are the technical sessions on the 20th, an address by Dr. Karl T. Compton, President of the Massachusetts Institute of Technology, on the morning of the 22d, and the alumni dinner that evening.

Dr. Compton's address will be delivered on the occasion of the sixty-first Commemoration Day exercises of the University. The principal speaker at the alumni dinner will be Abel Wolman, distinguished sanitary engineer, and lecturer, author and consultant in civil engineering. Mr. Wolman is Chief Engineer of the Maryland State Department of Health, and Chairman of the Water Resources Committee of the National Resources Committee, and was one of the earliest graduates of the Hopkins School.

As a part of the exhibit the hydraulics laboratory of the School will be in operation, and models of sanitary engineering equipment will be shown. A series of experiments on the flow and pumping of water will be run, and actuated dioramas of slum-clearance projects and flood control will be on view.

The University will confer honorary degrees upon a few distinguished engineers at the Commemoration Day exercises. Officials of the state and city, leading professors from other colleges, and research specialists in several fields of technical interest, have accepted invitations to the conference period on February 20.

How It Saves
● Hand Cleaning. Streets cleaned 250 days a year. Force; 24 men @ $2.50 a day. 33 miles of streets. Annual cost $15,000. ● A-W Cleaning. 2 Motor Sweepers' complete operating cost per year would be $12,600, including monthly write-off on the machines. At the end of 2 years, with the machines paid for, the cost drops to $5,600 a year. For a 5 year period the average annual street cleaning cost drops from $15,000 to $8,400—THIRTY-THREE THOUSAND DOLLARS SAVED.

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Year's Expense of 1¼ Millions Nets About ¾-Million Surplus for 15 Electric Utilities

WHETHER or not a useful purpose of a municipal electric utility is to sell current at cost and thus serve as a price yardstick for the private power companies, most of them are showing a decided surplus. Here are presented in rapid succession significant data covering fifteen of these utilities in Alaska, Alabama, Arizona, Arkansas and California.

The fourteen utilities which furnish financial statements for the last fiscal year, show approximate revenues of $1,959,000, total expenses $1,240,000, surplus $716,000.

Ketchikan, Alaska

From this municipality (3,796 population) Manager W. T. Stuart reports that he operates three hydros: two 600-kw S. Morgan Smiths dating to 1912 and 1913, and a 1,200-kw Pelton installed in 1925. The municipality used 282,126 kwh in the year ending October 31, 1936, and paid $6,136.50, or about 2.7 cents per kwh. The remaining 7,082,018 kwh were sold at an average of 2.08 cents, bringing total income to $147,463. Expenses totaled $61,434 (0.7 cents per kwh), leaving a surplus of $86,029.

Florence, Ala., Sells TVA for 46 Per Cent Profit

This city of 11,729 population, has, since July 15, 1936, distributed at TVA rates: in the first 4½ months 3,895,200 kwh, of which the municipal government used 194,994, and for which it paid $2,197. Manager J. W. Johnson reports that the total income for that period was $52,857; expenses, $36,012; surplus, $16,845. The distribution system is being rehabilitated and the capacity enlarged.

Williams, Ariz., Cost Is 4.3 Cents

Sales $32,039, expenses $22,012, surplus $10,027, reports R. J. Harrison, Superintendent of the municipal light and power plant at Williams. The municipality uses 40,000 kwh and pays $1,200, an average rate of 3 cents, against a cost of 4.3 cents. The population is 2,500.

Jonesboro, Ark., Reduces Rates 11 Times in 10 Years

The City Water and Light Plant of Jonesboro, Ark (10,326 population) has operated water, electric and sanitary-sewer systems dating to 1906.

The 1936 revenues totaled $160,585 for electricity and $59,298 for water, and provide a net surplus of $57,834. The municipal government uses 240,000 kwh free of charge, including the street-lighting system. The plant also furnishes all fire hydrants and a complete sanitary-sewerage system.

A recent report by the Arkansas Fire Prevention Bureau gives the water system the highest rating in the state, says Lloyd M. Rebsamen, Manager. A new rate reduction, the eleventh in the last ten years, will furnish 35 kwh per month for 5 cents, next 35 for 4 cents, and all thereafter at 2 cents. During the last ten years the average revenue per kwh has been reduced 59 per cent and consumption has increased 178 per cent.

The electric plant has three steam turbines: a 750-kw Allis-Chalmers-Kerr installed in 1920; two Westinghouse units, a 1,500-kw in 1926 and a 3,000-kw in 1930. A new boiler plant installed in 1936 at a cost of $40,000 adds a 540-bhp stoker-fired boiler to the system.

Expansion at Osceola, Ark.

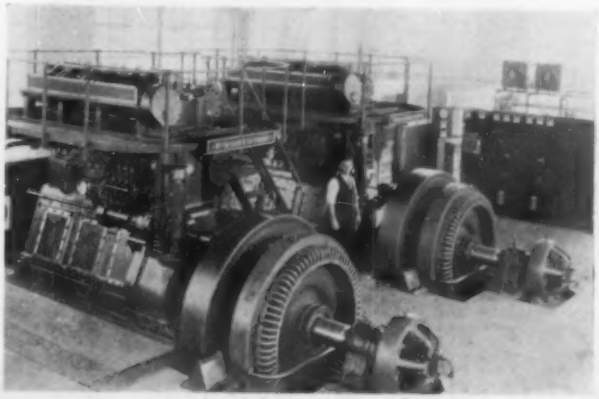
"Plant building remodeling, additional water mains and 15 miles rural electric lines," says Superintendent A. K. Baker. This is a diesel plant with a 100-kw De La Vergne installed in 1912, and three Worthingtons of 140-, 200-, and 425-kw, installed 1922-27-35; total capacity, 865-kw. The peak load is 550-kw. The total production in 1935 was 1,560,000 kwh, of which the city used 240,000 kwh without charge, and 1,090,000 kwh were sold. Population, 2,573.

Siloam Springs, Ark.

Two 250-kw diesels, installed by McIntosh-Seymour in 1931, produced 900,000 kwh in the last fiscal year, of which the city used 360,000 kwh without charge. City Manager H. H. Ball states that the remaining 540,000 kwh were sold for $36,000, or at about 6.7 cents per kwh. All expenses totaled $24,000; surplus, $12,000. Ratio of capacity to peak load is 56 per cent. Population, 2,378.

Nine California Towns Sell Purchased Power at an Average of 50 Per Cent Profit

Alameda (35,000 population) purchased 20,545,800 kwh. The city used 2,112,628 kwh without charge, and the remainder was sold at an average of 3.4 cents, amounting to $567,352. The total unit cost was 1.69 cents; surplus, $224,924. Theoretically, the city is charged 2¼ cents, but at the end of each month a dividend to the gen-



TWO 250-KW DIESELS AT SILOAM SPRINGS, ARK.

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eral fund is created equal to this charge (about $4,000 per month).

W. R. Paulson, General Manager, says: "We retired an obsolete substation of 4,500 kva capacity and put in commission a new central substation of 10,000 kva capacity; total cost, $212,000."

Anaheim (10,995 population) purchased 6,771,200 kwh. The city used 1,290,748 kwh and paid $12,617, or about 1 cent per kwh. The remaining energy was sold for $171,980; average, 3.68 cents per kwh. The costs total 1.35 per kwh, providing a surplus of $93,202. It is planned to change the distribution system from 2,300-volt delta to 4,000-volt Y, says V. W. Hannum, General Superintendent, Municipal Light and Water Department. The peak load is 1,960 kw.

Burbank (19,000 population) purchased 17,252,802 kwh at an average cost of 0.009-cent. The city used 2,613,960 kwh and paid $42,755, or 1.63 cents. The remaining energy sold at the average rate of 2.193 cents returned a surplus of $66,206. A transmission change from 16,500 volts to 34,500 volts will require rebuilding of substations, says J. H. McCambridge, Superintendent, Public Service Department. The peak load is 5,707 kw.

Healdsburg (2,296 population) purchased 1,596,600 kwh at a total expense of 1.88 cents. The municipality used 275,310 kwh. General consumption amounted to 1,048,200 kwh. The total income was $44,422; total cost, $29,768; surplus, $14,654. Archer B. Stuart is Superintendent Light and Water.

Lompoc (3,000 population) purchased 1,526,500 kwh. The average rate for both municipal and general consumer use is a little over 3.37 cents per kwh. Total income is $51,398; expenses, $35,756; surplus, $15,642. Thus the total cost is 2.34 cents per kwh. Small extensions for new customers will be made, says E. A. Vaughan, General Manager, Light and Water Department. The peak load is 600 kw.

Lodi (8,500 population) purchased 7,103,680 kwh. Total unit cost is 0.009-cent. The municipality uses 1,643,277 and pays $15,822, or under 1 cent per kwh. There is apparently a loss of 1,183,847 kwh, since general consumption amounts to 4,276,456 kwh, at about 3.2 cents average. The surplus amounts to $75,648. J. A. Henning, Superintendent Public Utilities, reports plans for extending the load, which now is equivalent to a peak of 1,830 kw.

Roseville (6,425 population) purchased 3,505,000 kwh. The total unit cost is 1.6 cents. The average rates are 2.34 to the municipality and 3.61 to the consumer. Surplus revenue was $42,590. A. E. Gilkey is Manager of Utilities. The peak load is 912 kw.

Truckee purchased 588,480 kwh; total unit cost, 3.04. The municipality used 48,000 kwh without charge. Revenue, $20,174; expenses, $17,889; surplus, $2,285. C. Edmunds, Manager, Truckee Public Utility District, stated that the construction of a hydroelectric or a diesel plant was being considered. The peak load is 170 kw.

Ukiah (3,124 population) purchased 2,365,200 kwh, at a total unit cost of about 2 cents. The municipality uses 395,017 kwh at about cost. The remaining energy is sold at an average of 3 cents, and returns a surplus of $21,057. E. M. Hopper is Electrical Engineer.

PRIME MOVERS AND EARNINGS OF MUNICIPAL ELECTRIC UTILITIES

At the request of THE AMERICAN CITY and THE MUNICIPAL INDEX, 500 municipal electric departments have prepared brief, clear reports of the physical and financial condition of their enterprises. The data include prime movers, peak load, annual production and power purchased, kilowatt-hours used by the municipality and what it pays for them, total income and expenditures, also plans for plant expansion.

This is an absolutely impartial survey—not made to prove any point or preconceived thesis, but to present to the many who are interested the top facts about municipal plants and distribution systems.

Financial figures were requested: *total revenue* for last fiscal year; *total expense* for last fiscal year, including operation, maintenance, depreciation, interest, all items.

A tabulation of the significant data of the 500 reports will appear in THE MUNICIPAL INDEX for 1937, to be published next month. The present article states the facts as furnished in all reports received from municipal electric utilities in Alaska and the first three states in alphabetical order, and all nine California cities reporting that they purchase and distribute but do not generate electricity. Readers are requested to send their comments on these articles and to contribute facts about their own utilities and plans.

THE AMERICAN CITY 470 Fourth Avenue, New York

Nearly Seven Miles of Slum Buildings Demolished in New York in Less Than Three Years

IN A report on the "Demolition Program of the New York City Housing Authority," covering the period from April, 1934, to December, 1936, inclusive, David A. Ostreicher, Director of Demolition, says in part:

"In a little more than 2½ years, 1,353 buildings were demolished, of which 1,242, or 92 per cent, were old-law tenements or residential structures. These buildings had a combined frontage of approximately 36,150 feet, or about 6.8 miles. Visualize, if you can, tearing down the entire building frontage on the west side of Fifth Avenue in Manhattan from Washington Square at 4th Street up to 142nd Street where Fifth Avenue runs into the Harlem River, and you will get a fair picture of the work accomplished.

"Thus a little less than seven miles of slums covering a ground area of 2,700,000 square feet, about 61 acres of land, containing some 7,900 dwelling units arranged to house approximately 35,500 humans, were literally wiped from the face of the earth.

"This task resulted in giving work to between 1,200 and 1,400 formerly unemployed housewreckers and laborers for the past 30 months at the prevailing scale of wages. Approximately 3,700,000 man-hours of labor were expended in razing these buildings, which contained approximately 81,100,000 cubic feet of structure.

"A special survey was recently conducted to ascertain the present status of the cleared sites on which these ancient, dilapidated, disease-breeding buildings formerly stood. This report indicated that as of November 1, 1936, when more than 1,000 demolition locations were completely filled, leveled and graded, about eighty of these locations were being temporarily used for auto parking, auto repairs, lunch wagons, material and junk yards; ten were converted into spacious playgrounds and recreation centers; all the remaining locations, numbering more than 900, with the exception of six locations on which new buildings were constructed, were left vacant. Thus where formerly stood more than 1,300 old filth- and disease-breeding slum structures, shutting off light and air to occupants and those living in adjoining buildings, there have been opened up hundreds of cleared sites which will at least admit air and light to the adjoining buildings and their occupants, and will afford many of the owners the possibility of salvaging some of their losses by placing on the market the cleared lots and vacant sites for new construction."

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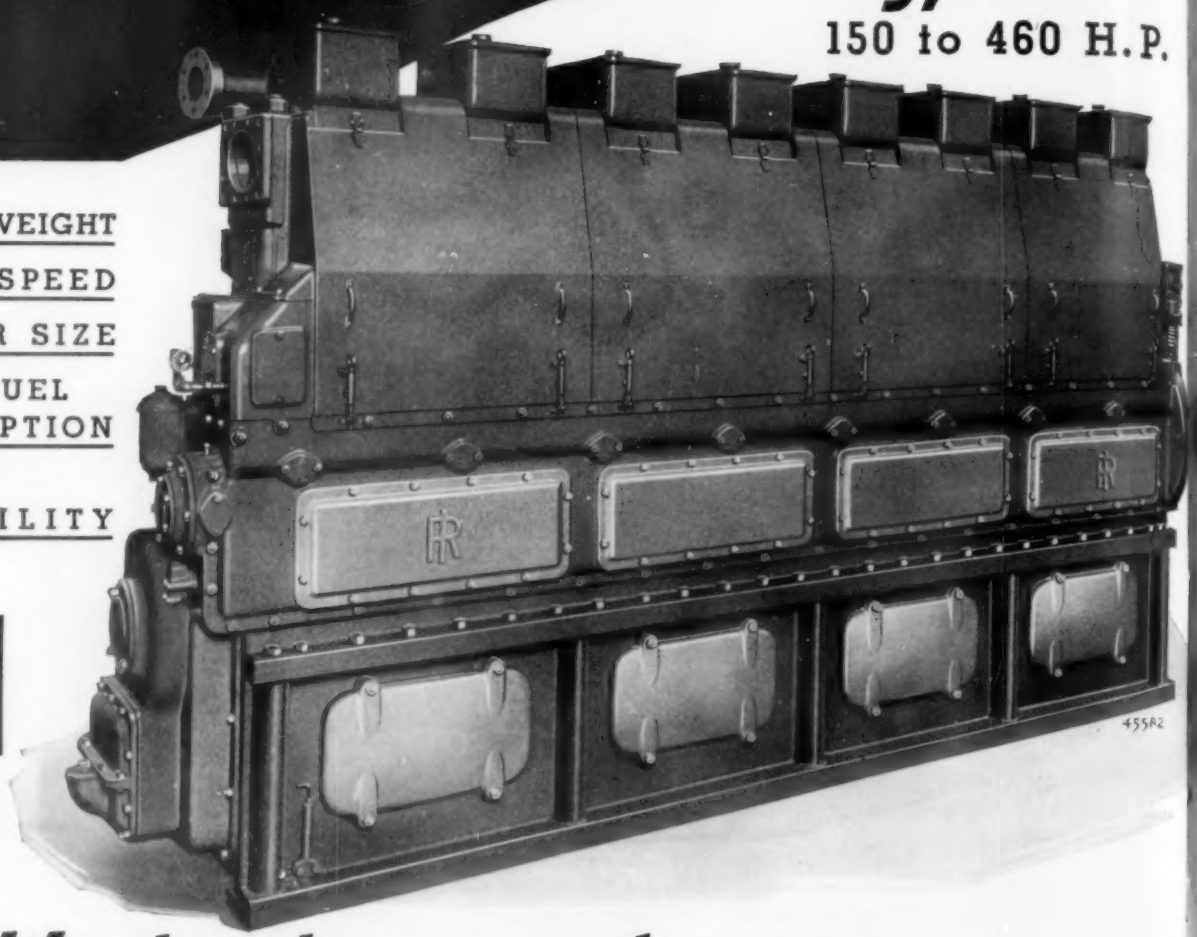

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1. Modern Design—Type S engines have such modern features as full enclosure of the engine, cylinder liners, and full force-feed lubrication. They follow the modern trend to higher speeds and lighter weight but without sacrificing reliability.

2. Lower Fuel Consumption—As low as that of the largest slow-speed engines and about 25% lower than that of high-speed automotive type engines.

3. Lower Installation Costs—The Type S weighs less and requires less space and smaller foundations than slow-speed engines. Installation and transportation costs are therefore much lower.

4. More Efficient Power Transmission—The higher speed makes possible less costly and more efficient generators. Better pulley and gear ratios are possible for most installations.

5. Inexpensive to Maintain—The unit is built for heavy duty service. Records prove its low maintenance expense.

6. A Thoroughly Proved Engine—More than 140 I-R engines of the same bore, stroke and speed are in successful service. Some of these have been in service for 12 years.

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Fire Schools—Arson Bureau—Rescue Work

Omaha Shows Value of Fire Prevention and Efficiency in Fire Department—But Conflagrations Must Be Guarded Against

By A. W. OLSEN
Chief, Fire Department, Omaha, Nebraska

OMAHA'S Fire Department, true to experience elsewhere, has had "good" and "bad" cycles. The first part of 1933 saw the Department at the low point of a bad cycle. The city had suffered comparatively large fire losses for the preceding five years (average $780,000 per year). In the first two months of 1933, two disastrous fires took the lives of eight firemen, bringing severe criticism from fire engineers and the general public. Though not all the criticism aimed at the Department was justified, it did awaken public officials to the fact that the city was not keeping pace with the times. Unquestionably, fire departments must keep pace with progress or else fall behind and some day be awakened to the fact that, when confronted by some particular emergency, they are unable to cope with it. During the last five years our personnel was reduced 20 per cent, salaries were cut, and replacement of apparatus was slow.

In 1932, when the writer was Master Mechanic, we started rebuilding many of our older pieces of apparatus —adding pneumatic tires, equipping the heavier trucks with 4-wheel brakes, and converting engines into triple combination pumpers. Today, all engine-company apparatus is equipped with booster pumps. A new 12-cylinder, double-bank American-La France city service truck equipped with a booster was placed in service last February. There is still much apparatus, purchased prior to 1920, which should be replaced, and little reserve apparatus is available for use by the off-shift when called to meet conflagration conditions.

The following activities, some new and some several years old, have contributed to the improvement of the Department:

1. *Firemen's Drill School.*—Since 1932 all firemen have been required annually to go through two periods of training of about a week each to brush up on fire protection, salvage work, and first aid.

2. *Bureau of Fire Prevention.*—We believe that our large reduction in fire loss has been achieved chiefly by the efficient functioning of this Bureau, established January, 1934. All officers of the Fire Department carry out regular inspections under the direction of the Bureau. Twice a year each captain inspects every building in the district assigned to him, drawing plans of the structure and familiarizing himself with every detail. A complete and efficient follow-up of all notices issued for violations is made by the regular inspectors of the Bureau. Fire prevention ordinances and safety laws have been modernized, giving us an up-to-the-minute set of laws to work under. The Bureau regularly inspects schools, theaters, hotels, public buildings, industrial plants and oil companies. The value of these inspections is enhanced by the almost complete elimination of political interference. Building department inspectors and fire inspectors have been operating in complete harmony. No building owner is allowed to harbor fire hazards because of political influence.

3. *Officers' Training School.*—In July, 1934, this school was opened, with weekly classes for all junior captains, senior captains and battalion chiefs. Regular instructions are given in modern fire fighting. Stress is laid on salvage work and minimizing water damage. We know the strategy of our officers has been greatly improved by the training school.

4. *Arson Bureau.*—This Bureau, composed of a captain, a graduate chemist, and a photographer, was established January 1, 1935. It soon obtained the first arson conviction in the city for 14 years. The activities of the Bureau have placed a restraining hand on the arsonist in Omaha. The Bureau cooperates with the Fire Prevention Bureau in photographing old buildings to aid in condemnation proceedings presented to the City Council.

5. *First Aid and Rescue Work.*—In July, 1935, this type of service was added as a regular evolution of the Fire Department. Two members of the Department have com-

DIAMOND T ENCLOSED STREAMLINED TRUCK

Equipped with five Crouse-Hinds demountable floodlights with Westinghouse 5-kw generator, M. S. A. all-service gas masks and H-H inhalators, diving helmet, life gun; Porter-Cable portable electric saw for cutting concrete, brick and metal. Inside the car are four battery lights and three sockets for direct-current lighting, and Tropic-Aire bus-type heater. Seats can be arranged to form an operating table. Capacity for five victims. Oxygen tent with 24-hour supply of oxygen. Car is on call by any physician. Car went in service June 6, 1936, and to January 1, 1937, responded to 130 fire alarms and 73 emergency calls; gave first-aid to 118 persons, transported 51 to hospital; made 30 inhalator runs; used diving helmet twice; recovered four bodies; one operation performed in the car; oxygen tent used 49¾ hours

World's Greatest Bridge paved with CONCRETE

. . . for economy and traffic safety

Smashing many world's records, the San Francisco-Oakland Bay bridge is truly one of the most spectacular engineering achievements of modern times. Let's look at the roadway—for which the entire bridge was designed. Although a relatively small part of the bridge structure, it contains enough concrete to pave a good sized town. It is significant that *concrete* was chosen! There are sound reasons for that choice.

Continuity of Service—Economy

Concrete's rugged strength and long life will obviate expensive repairs and keep the roadway in continuous service.

Here, as on any pavement project, concrete permitted an accurate, economical design for given conditions . . . promises many years of service with an absolute minimum of maintenance. Use of lightweight aggregate in the passenger deck contributed to economy by reducing dead weight of the concrete approximately one-third.

Safety Above All

And what about traffic safety in handling the enormous concentration of vehicles?

Concrete goes far in the solution of the problem on this bridge, as it does on thousands of miles of highways and streets throughout America. Its smooth, gritty-textured surface improves braking efficiency and car control. It minimizes skidding, wet or dry. Its surface remains true and even. It has good visibility.

Whether your program includes arterial trafficways or roads and streets carrying only a few hundred vehicles daily, the engineering solution is concrete.

PORTLAND CEMENT ASSOCIATION
Dept. 2-4, 33 W. Grand Ave., Chicago, Ill.

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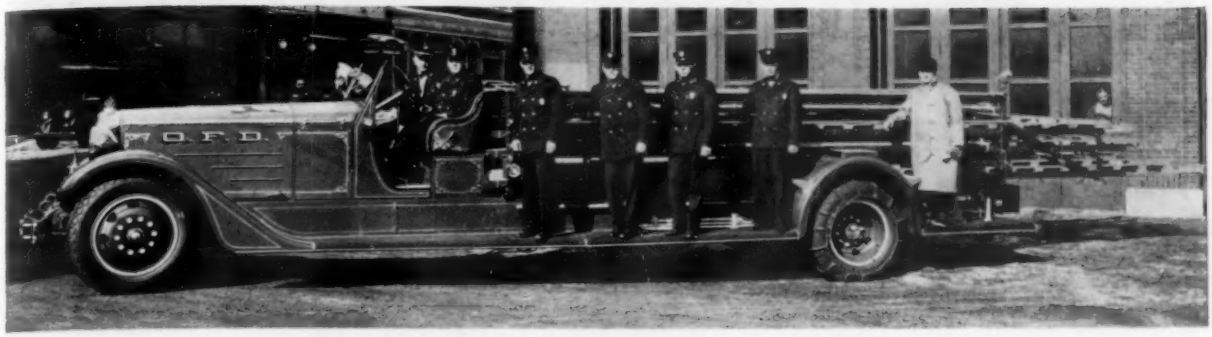
San Francisco-Oakland Bay Bridge. Deck paving built by Bates & Rogers Construction Co., Chicago, under subcontract from Columbia Steel Co., general contractors, for East and West Bay superstructures. Project designed and constructed under supervision and direction of Department of Public Works, State of California. C. H. Purcell, Chief Engineer; C. E. Andrew, Bridge Engineer.



AMERICAN-LA FRANCE HOOK-AND-LADDER TRUCK IN SERVICE MARCH, 1936

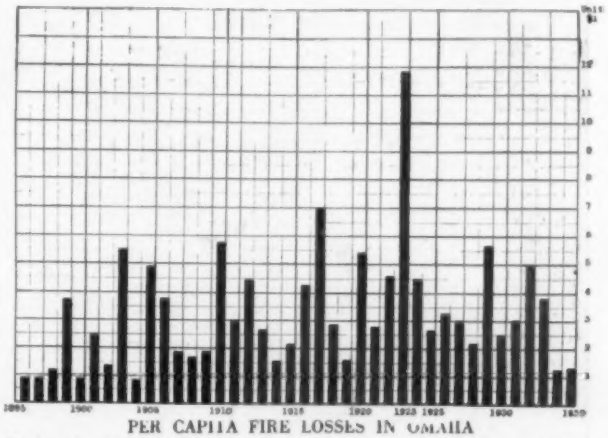
Powered by 12-cylinder 240-hp V-type motor to take Omaha's hills and gain time. In the cowl just back of the motor is a booster tank with 100 gallons of water, with 250 feet of 1-inch hose with ½-inch nozzle. Pressure for the water is built up through a small rotor pump of 100 gallons per minute, operated through a power take-off from the transmission. Truck carries 200 feet of ladders, and other equipment all accessible owing to low build and streamlining of truck, quite different from the old-style trucks

plete charge of the work and are ranked as instructors. These men have passed the standard, special and instructors first-aid courses with the American Red Cross, and command the emergency rescue car recently placed in service. This special-built car is used for emergency first-aid and rescue work as well as fire duty and is equipped with floodlights. The McCaa two-hour oxygen and Burrell all-service cannister-type gas masks and H-H inhalators are made by Mine Safety Appliances Co.; diving helmet made by Andrew J. Morse & Son. The truck carries the necessary surgical equipment to permit a surgeon to make an emergency operation when a life is at stake. The squad makes all calls on gas asphyxiations, drownings, hospital cases, in fact, any call where it is necessary to use oxygen and artificial respiration. It also responds to all fires in the downtown and high-value districts, flooding the area involved with light, spreading salvage covers, cutting away obstructions, aiding in scientific ventilation of fires, and taking care of the injured.

6. *Records.*—In recent years, with the increased activities of the Department, the need for an efficient record system has become apparent. In the past, records were kept by the chiefs on duty at headquarters and by civilian employees subject to constant change. Naturally, this has resulted in a heterogeneous collection of records, often burdensome and sometimes valueless. While no standard record system for fire departments is available, we are using forms and recommendations of the National Board of Fire Underwriters and the National Fire Protection Association. We have eliminated the constant change in office personnel by placing our records in charge of a statistician confirmed as a regular member of the Department civil service.

7. *Public Relations.*—One thing we have tried to do is to sell the Department to the public. Good-will is an intangible asset well worth striving for. Our fire-prevention men and first-aid instructors are constantly making talks. The humanitarian service rendered by the First Aid Bureau creates much good-will for us. Junior Fire Patrols are well organized in all schools. The fire prevention committee of the Chamber of Commerce cooperates with us in obtaining enforcement of ordinances and circulating educational matter.

We feel that the creation of these new bureaus and the improvement in the work of certain already established divisions is directly responsible for our great fire loss reduction (average for 1934 and 1935, $288,000 per year). We are proud of the progress made to date, but are ever mindful that these conditions do not eliminate the conflagration hazard that exists in our high-value districts. We realize that the peaks which occur in our fire-loss chart, such as that in 1923, are due to one or more serious individual fires. To combat these conditions, adequate manpower, modern apparatus, an effective fire-alarm system, and an ample water supply must be maintained.



PER CAPITA FIRE LOSSES IN OMAHA

During the last three years, fire losses in Omaha have been as follows: $278,000 or $1.25 per capita in 1934; $298,000 or $1.32 in 1935; and $276,000 or $1.23 in 1936. But in 1929 and in 1932 these losses exceeded one million dollars or $5.65 and $4.95 per capita respectively. The peak was in 1923 with a total loss of $2,343,589 or $11.82 per capita

Three Years of Public Housing
Where Do We Go From Here?

Under this heading in *Survey Graphic* for February, Loula D. Lasker has written a six-page discussion of the PWA housing program which merits careful consideration by every enemy of the slums and friend of decent low-rent housing. In this article Miss Lasker propounds, and answers in a keen, critical manner, such questions as:

What has the much-publicized government program actually accomplished?

How far has it produced decent homes within the means of two-thirds of the population?

What changes are now called for in law or administration?

To quote the final phrase of Miss Lasker's discussion, there is in our housing problem of 1937 "a challenge indeed to all who call themselves Americans."

IS YOUR COMMUNITY LISTED HERE?

(These communities use Western Electric Police Radio)

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- Birmingham, Alabama
- Bridgeport, Connecticut
- ♦ Cambridge, Ohio
- ○ Canton, Ohio
- ♦ ● Chicago, Illinois
- Cleveland, Ohio
- ♦ Columbia City, Indiana
- ♦ Columbus, Ohio
- ♦ Culver, Indiana
- Dallas, Texas
- Dayton, Ohio
- ■ ● Denver, Colorado
- ♦ Des Moines, Iowa
- Detroit, Michigan
- Duluth, Minnesota
- ♦ Duquoin, Illinois
- ○ East Orange, New Jersey
- ♦ Effingham, Illinois
- ○ Elgin, Illinois
- ○ Enid, Oklahoma
- ○ Evansville, Indiana
- ♦ Findlay, Ohio
- Fitchburg, Massachusetts
- Green Bay, Wisconsin
- ○ Grosse Point, Michigan
- Hamtramck, Michigan
- Hutchinson, Kansas
- ♦ ● Indianapolis, Indiana
- Jacksonville, Florida
- ♦ Jaspar, Indiana
- Kansas City, Missouri
- Kenosha, Wisconsin
- Louisville, Kentucky
- Lowell, Massachusetts
- ♦ Macomb, Illinois
- ○ Manchester, New Hampshire
- ♦ Massillon, Ohio
- Memphis, Tennessee
- ○ Metuchen, New Jersey
- ■ Mineola, New York
- Minneapolis, Minnesota
- Mobile, Alabama
- ○ Morristown, New Jersey
- Nashua, New Hampshire
- ○ Nashville, Tennessee
- Newark, New Jersey
- New Haven, Connecticut
- New Rochelle, New York
- New York, New York
- ○ Omaha, Nebraska
- ■ Oshkosh, Wisconsin
- Pasadena, California
- Palm Beach, Florida
- Pittsburgh, Pennsylvania
- ♦ Pontiac, Illinois
- Providence, Rhode Island
- ○ Rahway, New Jersey
- ♦ Redwood Falls, Minnesota
- Richmond, Virginia
- Rochester, New York
- Sacramento, California
- ○ St. Joseph, Missouri
- ♦ ● San Antonio, Texas
- ■ ● San Francisco, California
- ■ Santa Ana, California
- Seattle, Washington
- ♦ Seymour, Indiana
- Shreveport, Louisiana
- Somerville, Massachusetts
- ♦ ● Springfield, Illinois
- ♦ Sterling, Illinois
- ♦ Storm Lake, Iowa
- Syracuse, New York
- Tampa, Florida
- Toledo, Ohio
- Topeka, Kansas
- Waco, Texas
- Washington, D. C.
- ♦ Waterloo, Iowa
- ○ Westfield, New Jersey
- ○ Wheeling, West Virginia
- Wichita, Kansas
- ♦ Wilmington, Ohio
- Yakima, Washington
- Yonkers, New York

KEY TO ABOVE LIST

- ♦ State one-way Western Electric Police Radio
- ■ County one-way Western Electric Police Radio
- ● Municipal one-way Western Electric Police Radio
- ○ Municipal two-way Western Electric Police Radio

IF YOUR community is not listed above, find the nearest one that is. Go there and see what Western Electric Police Radio is doing for it . . . how much faster its police work . . . the lower number of crimes . . . greater number of arrests.

More than 40 million people are given *added* protection today by Western Electric Police Radio. Whatever the size of your community, there's equipment to meet its needs. Write to Graybar Electric, Graybar Building, New York.

Western Electric

Distributed by GRAYBAR Electric Co. In Canada: Northern Electric Co., Ltd.

POLICE RADIO TELEPHONE EQUIPMENT

Why not remember to mention THE AMERICAN CITY?

Forward Steps

Reported by
Municipal Officials, Chamber of Commerce Executives, and Others

Freeing the Path of the "Through Highway"

TENAFLY, N. J.—This small residential community is developing plans for an active solution to the problem of the invading state and county highway and its attendant evils. The Planning Board has envisioned a system of secondary or service roads paralleling all through highways at a depth not less than that of a normal building lot. All local comings and goings would thus be provided for apart from the major highway.

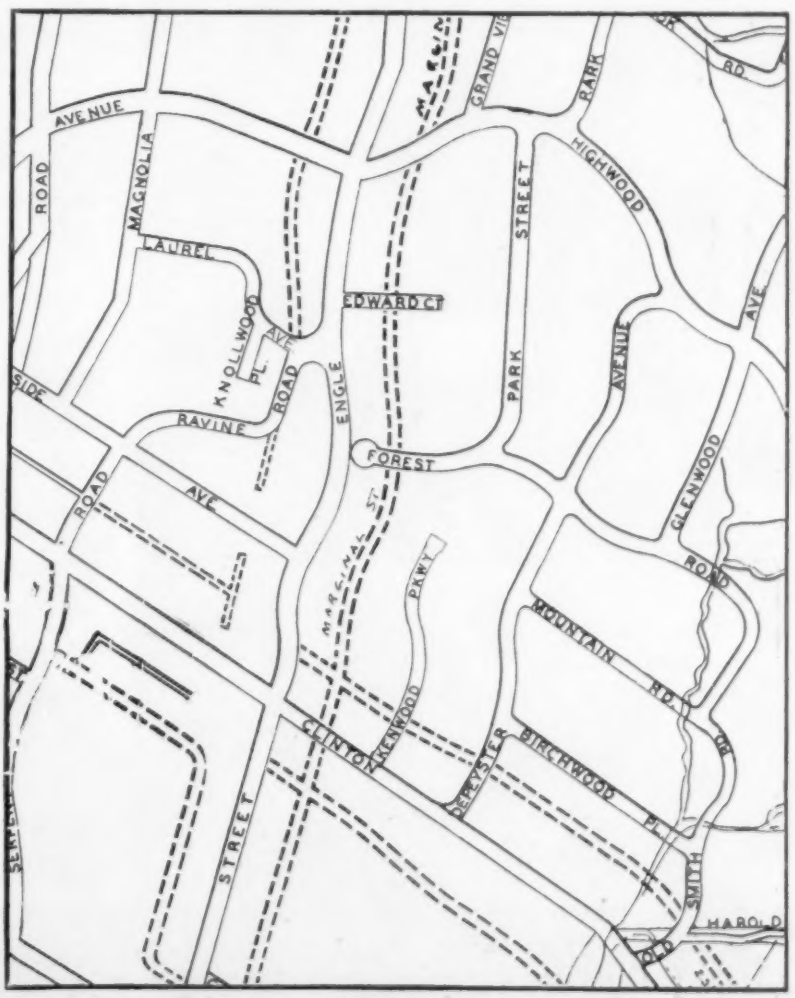
Tenafly as it stands today has an extensive undeveloped area which offers a fine opportunity for high-class residential development. Yet even while the community is largely unspoiled, this little borough has been far-sighted enough to establish a Planning Board to analyze the factors which have threatened and destroyed with blight so many residential areas elsewhere, and to prepare a master plan for Tenafly to protect it from a similar destiny.

In the course of its studies the Board uncovered many significant facts, of which the most disturbing was the existence within the borders of this small municipality of ten miles of state and county highways over which there is no direct local control. The purpose of these highways is to move traffic swiftly in large quantities, but, as the volume and speed increase, the menace to adjacent residential property values is ever greater. Good residential development slinks back from this distasteful sight and sound and danger, and nondescript business development and low-class residential development take its place.

Throughout the past few years property on or near the main highways of Tenafly has moved slowly. More than that, practically every piece of property on or near a main thoroughfare is for sale. Why? Because present home owners and prospective home owners feel no sense of security in what the future holds for that section in which they live or might desire to live. They know that failure to protect a residential section from the ravages of traffic means haphazard development, and haphazard development has harmed if not ruined every community in which it has taken place. They know that unless protective measures are taken, every piece of property they own, or buy, may eventually lose its highly desirable residential characteristics.

Experience has shown that such deterioration spreads its path 1,000 feet or so, on both sides of a through highway. Westchester County, New York, filled this space with trees and grass and gardens, but the same plan applied to Tenafly would swallow up one-third of the entire area of the borough and at the same time raise costs and cut tax receipts. So the Planning Board of this town proposes that it simply turn its back on these highways. Secondary roads would be built paralleling the highways at a minimum depth of a normal building lot and be restricted to local traffic only, and all access to residences, either by driveway or by pedestrian walk, would be from the interior streets rather than from the main highways. These roads would be narrow, with a minimum of pavement, and would conform wherever practicable to the natural conditions of the property they traversed. Except at certain strategic points, residential streets intersecting main highways would be dead-ended. And, in addition to this street plan, it is recommended to further protect these border residential areas by the eventual construction of attractive walls on both sides of the main arteries. Thus would Tenafly solve a serious problem.

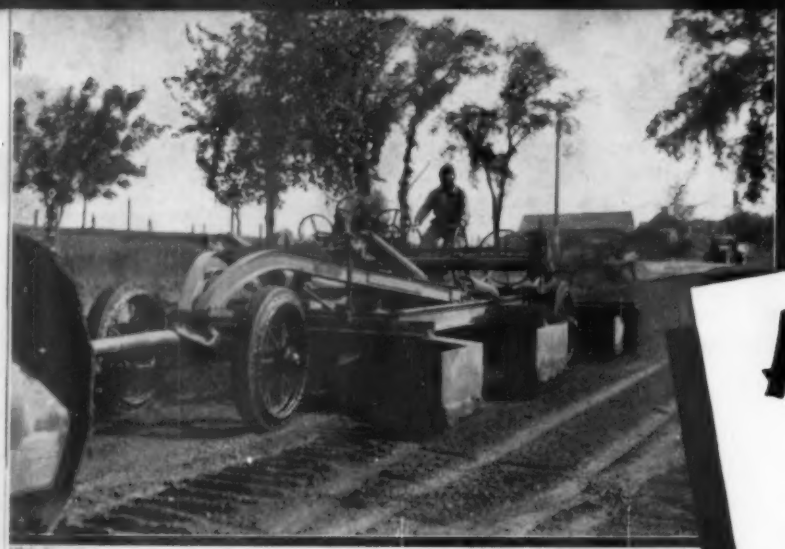
HARVEY DUNN,
Chairman, Planning Board.



A PART OF THE MASTER PLAN OF TENAFLY, N. J.
Showing (by dotted lines) some of the proposed service roads

Berkeley's Yacht Harbor and Aquatic Park

BERKELEY, CALIF.—The transformation of Berkeley's waterfront from an unsightly mud-flat to a marine recreational center is under way. With the Yacht Harbor more than 65 per cent completed and the Aquatic Park rapidly taking form, this project will be one of the greatest im-



ASPHALT FOR A WELL BALANCED HIGHWAY PROGRAM

FARSIGHTED highway officials and engineers are recognizing the importance of well balanced highway systems with a planned program of development that not only includes primary or arterial highway construction, but lays equal stress on adequate, more lasting and convenient farm-to-market or secondary roads.

Many are taking advantage of the recent change in Federal Aid policy which now includes grants for secondary road improvement. They are also taking advantage of Standard Asphalt products to get more for their money in faster, safer, low cost surfaces.

Standard Oil Company (Indiana) asphalt and road oil products provide a grade for every type of mix and service. Your local Standard Oil representative can give you full information on standardized methods of construction to help you get the most satisfactory highway miles at lowest maintenance cost from your road fund.

Copr. 1937, Standard Oil Co.

Asphalt for every purpose

STANDARD OIL COMPANY
(INDIANA)

BEFORE, AND AFTER, THE WOODEN WALK AND THE BERTHING PLACES WERE CONSTRUCTED AT THE YACHT HARBOR, BERKELEY, CALIF.

provements the local metropolitan area has made.

Including the cost of land, the total expenditures for these additions to Berkeley's recreational plant will total more than a million dollars. The Federal, state and city governments are cooperating to make this venture possible. Ten WPA projects with Federal contributions totaling $813,618 are under way. The city is putting up $248,692 in the form of land, supervision, materials and equipment. The state of California has rendered invaluable assistance in that it has cooperated with the city in the matter of dredging the material for the East Shore Highway from the Yacht Harbor and thereby increasing its depth.

The Yacht Harbor will be 4,000 feet long and 1,600 feet wide. Water depths range from 7 feet at the entrance of the harbor to 4 feet at the shoreward extremity. Earthen sea-walls protected by rock facing have been built out in the bay to protect craft from the waves swept up by the winds blowing through the Golden Gate. Piles have been driven and berthing spaces have already been provided for more than 300 boats. Construction of necessary floats and other equipment is well under way. There are 103 boats in the harbor at the present time.

An old building which was used several years ago as a warehouse has been reconstructed and, with additions to it, a boat-house 240 feet in length and 42 feet in width is now complete. Shipways and a hoist were built for removing boats from the water. With berthing space for more than 300 craft already available, it is expected that in the near future the Yacht Harbor will be the home of more than 500 pleasure boats. One yacht club has made provisions for constructing a club-house. Fishing from the breakwaters is drawing the attention of those who enjoy this sport.

While the Yacht Harbor has probably attracted more attention than the Aquatic Park, the latter improvement should not be overlooked, because upon completion a larger proportion of the population will be able to enjoy its facilities.

The Aquatic Park is a lake shut off from San Francisco Bay by the new Eastshore Highway. It is kept at high level by the use of tide gates. Extending from University Avenue to Ashby Avenue, a distance of more than a mile, this marine park will provide recreation for thousands. Its width varies from 200 to 900 feet. Rowing, canoeing, motor-boat racing, model-yacht sailing, picnicking and other water sports will be available for Berkeley residents. Roadways and walks are being constructed around the lake, and thousands of shrubs and flowers are being planted to add to its beauty.

A project involving the construction of a swimming tank has been submitted to the WPA and it is hoped that this work will be started in the near future.

Supervision of this immense program has not been an easy task. This is particularly so because there have been no substantial additions of personnel to the regular departments involved in the work. The City Engineer, Harry Goodridge, as head of the Department of Public Works has had charge of engineering and construction; the Planning Commission has assisted in formulating the general plans, and the Recreation Department has contributed to the design, as well as being responsible for planting the parking areas.

Too much credit cannot be given Hollis R. Thompson, City Manager, through whose time and efforts it has been made possible to finance this program.

E. M. HAUG,
Secretary, City Planning Commission.

A Large Sports Arena for a Town of 2,500

HERSHEY, PA.—On December 19, 1936, the town of Hershey dedicated to sport an arena that will seat 7,100 people for ice hockey and 10,000 for sports that do not require a large rink. This seems an unusual project for a town of 2,500 inhabitants, but Hershey has been drawing people to its sports center from a radius of 75 miles. It already has four golf courses and the championship links of the Hershey Country Club, and a stadium accommodating 30,000 spectators will be completed next year.

The new sports arena, which has been eight months in building, is the largest span monolithic concrete structure in America, and the only one of its kind in the United States. It is rectangular in shape, 232 feet wide and 362 feet long. There is not a pillar or a column anywhere visible. The seats go up in tiers from the ice rink to the roof, which is 100 feet above the ice floor.

The amazing, outstanding feature of the arena is its arched roof, resting on a series of hinges where the total weight is focused. The hinge in each case is not supported on concrete, but rests on a lead plate, a combination which prevents cracking of the reinforced concrete structure. To allow for contraction and expansion in two directions, the roof structure was put up in five individual sections with an expansion joint between each two sections.

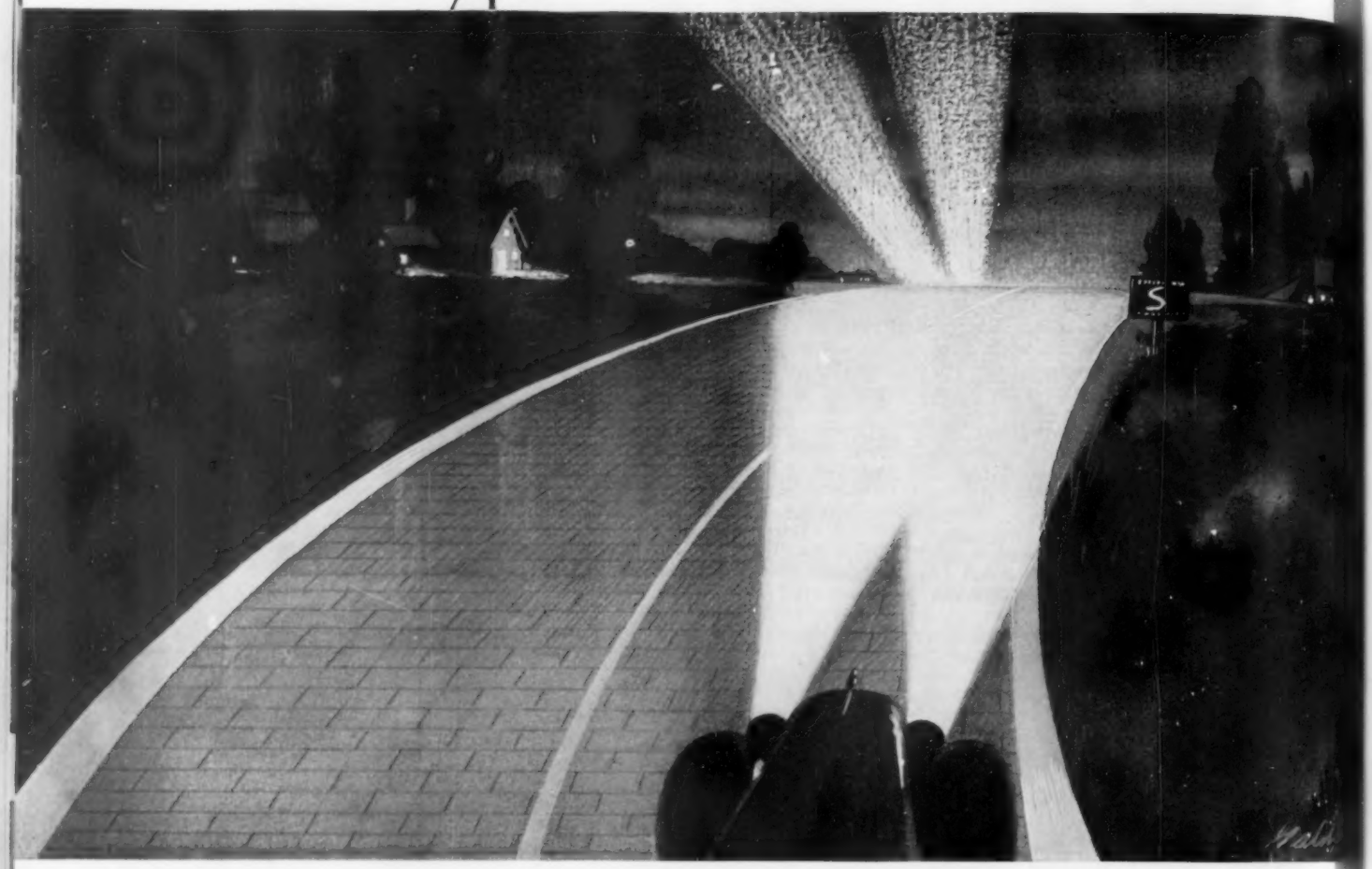
The entire ceiling and end walls of this large auditorium are lined with acoustical cork to absorb sound and prevent reverberation. Although its main purpose is sound absorption, the bluish-white surface of the cork will aid in producing an even distribution of indirect light.

To give sufficient light on the playing surface of the ice, there have been suspended from the ceiling three large lightoliers, 23 feet in diameter and each containing 47 searchlights. The lightoliers also house the public address system necessary in a building of this character.

The rink, of standard size, 200 by 85 feet, required approximately 10 miles of wrought iron pipe of various lengths, which is now embedded in the concrete. At each end of the rink, under the concrete floor, is a series of valves which

THE HERSHEY SPORTS ARENA

MORE HOLIDAYS for DEATH!



● Among the many factors determining highway safety is the pavement surface itself. Brick pavements aid the public in safe driving. Brick are soft-toned in color. There is no glare to tire daytime vision. There is excellent visibility at night.

The flat crown and true even surface of a brick pavement is ideal for modern traffic. The wire-cut surface has a skid-resistive texture which is completely exposed before the pavement is open to use.

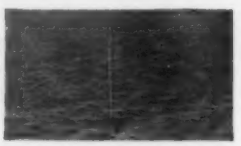
Build the safest possible roads and streets. Use brick on new and resurface jobs. In addition to its safety for users, brick has the lowest cost per year of any pavement ever built. National Paving Brick Association (Affiliated with Structural Clay Products, Inc.) National Press Building, Washington, D. C.

EASY ON THE EYES

Brick is a safe pavement day or night. There is no glare—less eyestrain. It picks up the illumination from the headlights and shows a sharp definition of the edge of the road.

SKID-RESISTING SURFACE

Brick pavements have a high coefficient of traction. Use brick on highways and on both business and residential streets.



BRICK

THE SAFE PAVEMENT FOR MOTORIZED TRAFFIC

permit the brine to circulate through the pipes. In connection with this circulatory system, an ice plant of 90 tons capacity was installed.

Ventilation is accomplished by means of ten exhaust fans in the main auditorium which change the air in fifteen minutes. To keep the devotees of hockey warm during the winter season, steam pipes have been placed behind the seats. The arena is insulated against both the winter cold and the summer heat.

The floor is of concrete, and special wood floors are provided for those sports requiring it.

In addition to the hockey rink, the building contains a dressing room for the Hershey Hockey Club, a dressing room for the visiting hockey club, two rooms for the members of the Hershey Figure Skating Club, and one for the Hershey Junior Hockey Club. There is a garage for the large buses used by the various hockey teams, a transformer room, a switchboard room, an equipment room, an ample amount of storage space, and offices for the administrative officers. Provision has been made for five lunch counters.

There are two main entrances and 46 exits. The building can be cleared of people by these 46 exits in 60 seconds. Across the highway from the sports arena, between the arena and the stadium, a parking lot has been created to care for 4,000 automobiles.

ALEXANDER STODDART.

Effective Zoning Publicity

CULVER CITY, CALIF.—An improved zoning law has ridden into this municipality on a wave of well-thought-out and well-executed publicity. Under the old 1926 ordinance the entire city was zoned for apartment house use, with 16½ miles of business frontage on the market and about 20 acres for industrial use. The new ordinance, adopted on January 11, 1937, marks off 41.6 per cent of the town for single-family use, 19.6 per cent for two-family, 21.8 per cent for multiple-family, 11.4 per cent for business, and 5.6 per cent for industrial use. The business frontage is now 8 miles, as against the former provision for 16½ miles. Since the ultimate population is figured at 41,000, the 8 miles is still twice the necessary amount, but Culver City has the excuse of a contributing population surrounding the city of about 30,000.

In the middle of 1936, the writer was called by the municipality of Culver City to revamp its entire zoning plan and write a comprehensive zoning ordinance. On examination of the old ordinance of 1926, it was concluded that the only possible course was to scrap everything and start with a clean slate. Accordingly, five months were spent in gathering the necessary facts and putting them down in visual form upon maps and charts. It was realized at the outset that part of the job would be to mold public opinion to a new way of thinking, and these maps and charts were to be used in spreading city-wide understanding of the problem.

When all was ready, the first move was to hold meetings with all the civic organizations. A special effort was made to win over the realtors, which was successful. The second move was to rent a store building in the main part of town for a period of a month and set up an attractive planning exhibit, including, of course, all the new data with a colored map of the proposed zoning and a contrasting map of the old plan. The third move to mold public opinion was to secure an appropriation from the city of $250 for the purpose of running full-page advertisements in the two local newspapers, one a weekly and the other a daily.

The results of these publicity activities were satisfactory, for when the first public hearing was held before the City Planning Commission, there were only two minor protests from the population of 7,000. At the second hearing there was no opposition at all. At the two hearings by the City Council there was one minor protest which led to a small change in the ordinance. The new zoning map has now been approved by the city council and adopted.

A. E. WILLIAMSON,
City Planning Consultant.

ZONING...

INSURES A WELL PLANNED CITY OF THE FUTURE

The zoning of your city is one of the outstanding opportunities of your Government that feels some responsibility for the future of the territory under its jurisdiction, to supervise new community building enterprises and single improvement projects. It is your opportunity to coordinate such work in a well conceived city development program.

ZONING prevents undue congestion of population by establishing districts throughout the city in which regulations are made to prevent overcrowding of land.

ZONING insures better conditions for health and sanitation in homes and offices through minimum requirements for light and air.

ZONING is exercised under the police power of the state. The inherent right of the people to pass laws for the public safety, health, morals and general welfare.

ZONING stabilizes and protects property values and investments by determining in advance the use towhich property may be put.

ZONING controls the established character of entire districts and checks future exploitation and misuse of property.

FINAL HEARINGS:

December 14, 8 p. m. — December 28, 8 p. m.

In City Council Chambers

This Public Notice to Property Owners Authorized by the City Council of Culver City

A. H. SEGRELL, Mayor

CITY COUNCIL
G. S. BRATTON, J. F. LEHMAN, FRANK REEVES, PHIL STEPHEN
M. TILLEMAN, City Attorney

PLANNING COMMISSION
LYLE C. BANKSON, President
W. T. KEEFER, J. SHAEFER, H. E. EATON, T. SOWERBUTTS, W. R. HASKELL, W. W. RONEY

A. E. WILLIAMSON, City Planning and Zoning Consultant

ONE OF CULVER CITY'S NEWSPAPER ADVERTISEMENTS

City Helps Commuters

If the commuters of Bloomfield, N. J., want a 46-trip monthly ticket on the Lackawanna R.R., the Transportation Commission of the town will assist them, as shown by the accompanying postcard sent to the citizens

What Is Your Opinion?

The Bloomfield Transportation Commission is desirous of taking a poll of the residents of Bloomfield in order to determine their attitude towards the issuance of a 46-trip monthly commutation ticket on the Lackawanna Railroad (similar to that used on the Erie Railroad) in addition to the 60-trip monthly commutation ticket which is now being issued, as it has been found that commuters working five days per week only use this railroad on an average of 42 trips per month. The success of this poll depends upon **your** cooperation and the result should be beneficial to all concerned. Will you therefore kindly answer the following questions and mail this card to the Bloomfield Transportation Commission, Municipal Building, Bloomfield, N. J.

Are you a commuter between Bloomfield and New York City?
Yes ( ) No ( )

If so, how do you travel?

By Lackawanna Railroad ( )
" Erie Railroad ( )
" Hudson Tube ( )
" Bus ( )
" Automobile ( )

Why do you use this method of transportation?

More convenient ( )
Better service ( )
Less expensive ( )
Other reasons .....
.....

Have you ever been a commuter on the Lackawanna Railroad?
Yes ( ) No ( )

Did you leave the Lackawanna Railroad for reasons stated above?
Yes ( ) No ( )

Would you use the Lackawanna Railroad if the 46-trip ticket were issued?
Yes ( ) No ( )

Do you believe that the issuance of a 46-trip ticket would be of mutual benefit to the Lackawanna Railroad and the Town of Bloomfield by bringing in new residents, thereby increasing the number of commuters on this railroad and disposing of property for sale, increasing the sales of local merchants, etc.?
Yes ( ) No ( )

Do you favor the issuance of this ticket? Yes ( ) No ( )

Do you find local bus and trolley service satisfactory?
Yes ( ) No ( )

If you have any complaints on transportation, please notify Charles A. Harrington, Supervisor of Transportation, Municipal Building, Bloomfield, N. J.

POSTCARD TO CITIZENS

BENDIX' FIRST CONCERN IS

Traffic Safety!

PREVENTION OF TRAFFIC ACCIDENTS IS MORE IMPORTANT THAN PUNISHMENT!

BENDIX IS PLEDGED TO SAFETY

Traffic safety—for both motorist and pedestrian—is the very corner-stone of the Bendix industries. Bendix builds brakes of all types — more than any other maker in the world — as well as many other chassis units vital to safety.

Sincerely and determinedly, Bendix several years ago set about developing machines to check and test and provide data for adjusting every safety factor of the motor car. Bendix now makes the most complete line of chassis test and corrective equipment in the world.

These Bendix machines are in use in virtually every motor car factory—used for final new-car inspections.

Bendix now offers like equipment for municipal safety line testing. It is positively and consistently accurate. It is very fast. It is simple. It is very sturdy. It is very reasonable in price.

This Bendix Civic Safety Clinic Equipment enables a small staff of men to test a car a minute on each safety line. It tests brakes, steering, headlights, wheel alignment, and as much in addition as you care to check.

Cincinnati, Miami, Omaha, Portland, Billings, Knoxville—have recently installed Bendix equipment. We suggest you communicate with them, and write to Bendix, for full details.

LEFT: *Tests each brake separately by full wheel revolution under electric power . . . shows total stopping ability . . . shows up "out-of-round" drums. TESTS TRACTOR AND TRAILER TRAINS with utmost accuracy.*

RIGHT: *Testing wheel alignment and toe-in, precisely and quickly. Shows exactly what work needs to be done. Nothing left to guesswork or estimate when Bendix test equipment is used.*

BENDIX

CIVIC SAFETY CLINIC Equipment

BENDIX PRODUCTS CORPORATION
(*Subsidiary of Bendix Aviation Corporation*)
401 Bendix Drive, Dept. A-2, South Bend, Ind.
Send me at once full details about Civic Safety Clinic Equipment, prices, operating plan, etc.

Name.....
Address.....
City.....*State*.....
Business or Profession.....
City Official (title) □.....Dealer □

Traffic Control and Facilitation

Conducted by Publications Committee, Institute of Traffic Engineers, 1 Park Ave., New York
Paul L. Green, Chairman; John T. Gibala, Vice-Chairman; William C. Brandes, Otto K. Jelinik, Burton W. Marsh, William R. McConochie, E. J. McIlraith, Donald M. McNeil, D. Grant Mickle, Robert A. Mitchell, Clarence P. Taylor

Special Signal Replaces Safety Islands

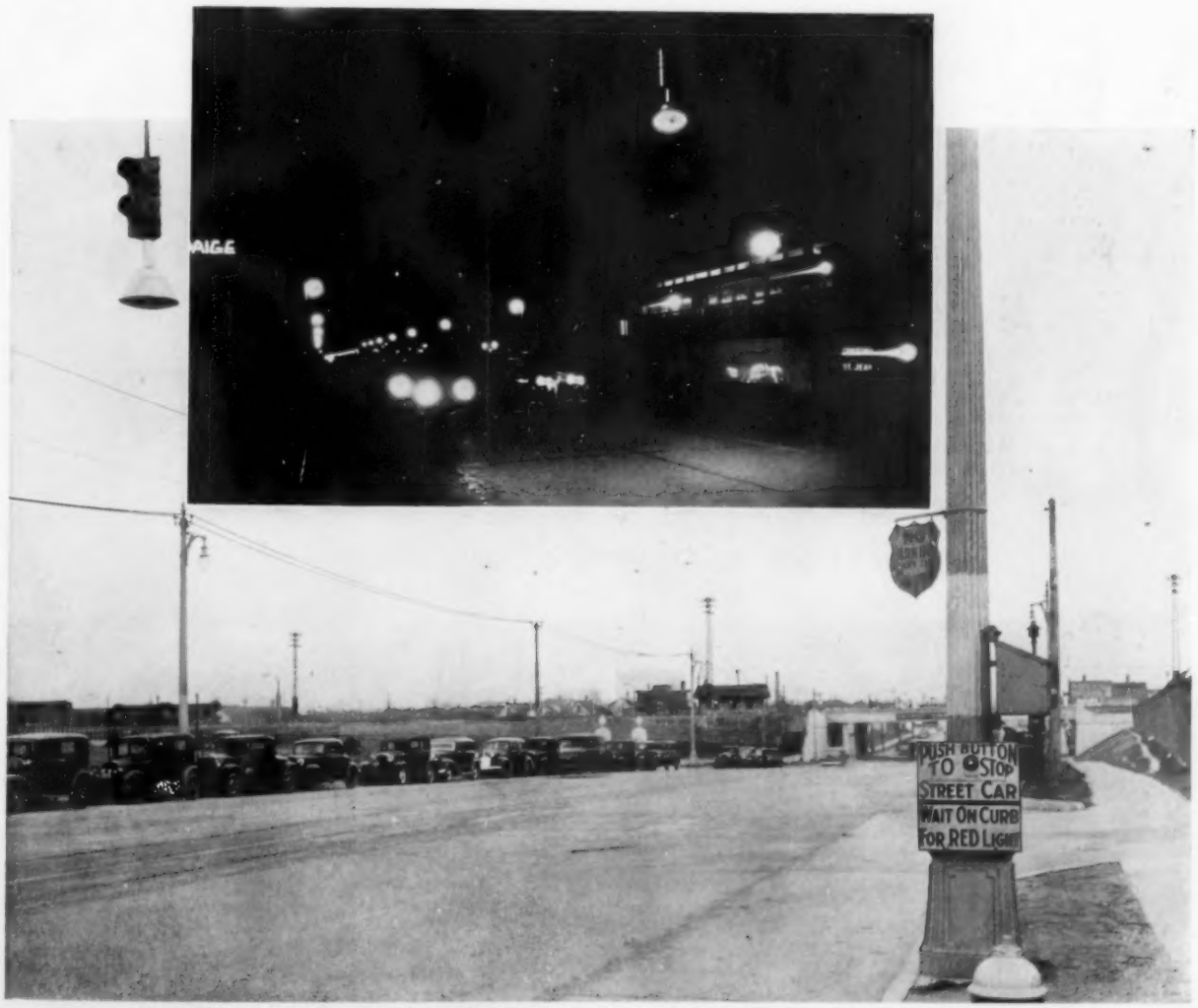
A SURVEY in Dearborn, Mich., revealed that certain protected safety zones had been the cause of serious accidents to motorists and that most of the pedestrians injured in these locations were struck between the zone and the curb. In fact, safety zones seemed to be wrong practice here. Consequently, the Board of Wayne County Road Commissioners, in cooperation with the city of Dearborn and the Detroit Department of Street Railways, devised a traffic signal to take the place of the safety zone.

The signal is a standard amber and red traffic signal with a 500-watt floodlight attached to the bottom. It is suspended from the trolley span wire and hangs over the pavement facing oncoming automobile traffic.

When a pedestrian desires to board a street car, he pushes the button at the control box located on the post at the side of the street, and then waits back of the curb until a car approaches. The signal goes amber when the trolley contacts a switch about 300 feet from the stop; and when the red shows, automobile traffic stops and the passenger boards the car. When the car moves away, the signal light is turned off by another trolley switch. The floodlight turns on with the red light, illuminating a wide path from curb to street car.

This type of signal, which has been operating here since July 7, 1936, can be used to best advantage on narrow streets where safety islands would seriously restrict the volume of automobile traffic. Since it is not suitable for use at intersections controlled by traffic signals, it can be used to advantage at car stops between main intersections. The Detroit Street Railway is considering using this device at a number of car stops.

J. L. WEHMEYER,
Safety Engineer, Board of Wayne County Road Commissioners, Detroit, Mich.



PEDESTRIAN PUSHES BUTTON AND WAITS BACK OF CURB FOR STREET CAR—WHICH CONTACTS A SWITCH THAT MAKES THE SIGNAL AMBER AND THEN RED, STOPPING AUTOMOBILE TRAFFIC. THE FLOODLIGHT TURNS ON WITH THE RED LIGHT

THE BARRETT COMPANY New York Chicago Birmingham St. Louis Detroit Buffalo Providence Lebanon Rochester Baltimore Minneapolis Cleveland Columbus Philadelphia Toledo Youngstown Syracuse Hartford Boston Milwaukee Cincinnati Bethlehem Portland, Me. Norwood, N. Y. In Canada: THE BARRETT COMPANY, Ltd. Montreal Toronto Winnipeg Vancouver

Cut Your Speed, or Stop

AT a sharp blind curve in the Falls Road, Baltimore, Md., there has recently been installed a device for checking the speed of those reckless motorists who attempt to take the curve at any speed higher than the maximum safe limit of 15 miles per hour. This device, known as the Adler speed-control system, comprises the following:

1. A traffic signal with red and yellow lenses, suspended over the highway just in advance of the curve.
2. A vehicle detector located in the roadway at a proper predetermined distance in advance of the signal.
3. A control mechanism, in its cabinet, mounted on a post or pole at the roadside.
4. A "car indicator" located beyond the traffic signal, facing motorists entering the curve from the opposite direction, and indicating to them the presence of a car about to enter the curve.
5. A reflectorized sign indicating the maximum speed for taking the curve.

The normal color of the traffic signal is red. A vehicle entering the curve passes over the vehicle detector, actuating it and sending an impulse to the control. After a short, predetermined delay interval, the control changes the signal from normal red indication to flashing yellow. The distance of the detector from the signal, and the length of the delay interval, are so calculated that if a car is proceeding at the safe speed, the red STOP indication will have changed to the flashing yellow PROCEED WITH CAUTION indication by the time the car arrives at the signal.

Should a car be entering the curve too fast, however, it will reach the signal in advance of the flashing yellow indication and will therefore be confronted with a red indication and forced to stop at a designated stop line in obedience to the signal. In this case the driver will have to remain stopped until he receives the flashing yellow indication to proceed with caution.

It will therefore be seen that a driver who voluntarily reduces his speed to the 15 miles indicated will never be stopped, whereas the driver who attempts to take the curve too fast will be penalized. It is important to note that a driver approaching the curve on the wrong side of the road will be unable to indicate his presence and will therefore be confronted by a red signal and stopped in order to prevent possible collision with cars coming toward him.

When a line of closely following cars approaches the signal, and if they are moving at the proper rate of speed, the signal will continue to display its flashing yellow indication until a gap occurs in the line. It will then revert to its normal red.

Also Warns of Approaching Car

As an added safeguard, a car which actuates the detector causes a car indicator sign to become illuminated on the other approach to the curve, so as to indicate to motorists rounding the curve in the opposite direction from the original car that they may shortly expect a car to make its appearance. All equipment is in duplicate, so that both approaches to the curve are controlled as to speed and ability to send out advance warnings to cars proceeding in the opposite direction.

Other Applications

A system of this general nature may be employed at other points where it is desired to limit speed, such as steep downgrades, school zones, road ends, narrow bridges, and approaches from open highways to villages or cities.

The vehicle detector employed in Baltimore is of the sound-actuated type. Detectors of the pressure-sensitive or magnetic types are equally adaptable.

The control mechanism is of the electronic or static type without motors or gears, and is especially designed for the functions which it must perform. It is mounted in a weatherproof case at convenient roadside locations where it may be properly adjusted to local conditions.

The traffic signals and speed signs are of standard design. The car indicator is a standard type of one-section traffic signal with a special lens, in black and white, bearing the word CAR.

Reports thus far received indicate that the Baltimore application of the Adler speed-control system is operating most effectively in reducing speed at the dangerous Falls Road curve. Drivers who voluntarily reduce the speed of their cars when approaching the curve are unmolested, but the would-be speeders in every case are checked by the red light at the curve. It has been found that the car indicator signal is a great help to pedestrians who may wish to cross at this dangerous location, since by observing the indicator they can learn whether a car is about to come into sight around the curve.

VEHICLE PASSING OVER THE DETECTOR IN THE LOWER PICTURE ACTUATES A SIGNAL AHEAD WHICH WILL BE RED IF THE MOTORIST GETS TO IT TOO QUICKLY

THIS LIGHT HAS DISCOURAGED SPEED AT THIS BALTIMORE CURVE

SERVICISED QUALITY PRODUCTS © 1920

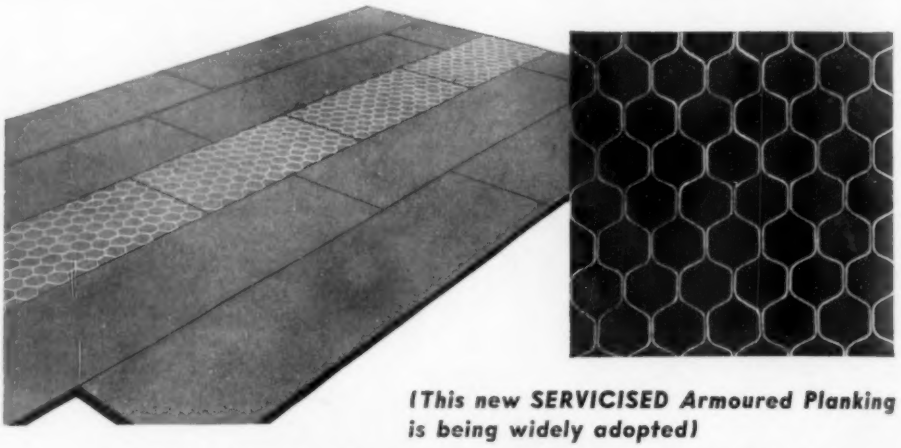
Servicised ASPHALT PLANKING

SERVICISED !

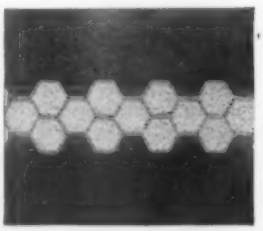
•WHERE THE GOINGS TOUGH! Specify *Servicised* Armoured Planking

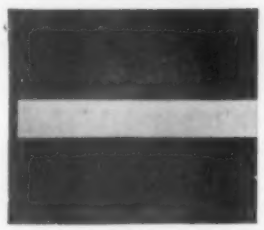
Servicised Armoured Asphalt Planking is a tough product for surfaces that get a lot of punishment,—bridge decks, bridge and viaduct approaches, ramps, etc.

The steel armour resists abrasion, prevents rotting and controls flow of paving material under stress of heat or pressure.



(This new SERVICISED Armoured Planking is being widely adopted)





• Many installations of Standard SERVICISED Asphalt Planking still provide a durable, weather-proof, resilient paving after more than ten years of service.

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Full details and prices will be furnished on request. Write for special Bulletin.

Method of laying Servicised Asphalt Planking on a prominent Chicago bridge. Here the Planking is being cemented down in hot asphalt. It cannot creep, shatter warp nor deteriorate from moisture. It is light, resilient and deadens traffic shock.

TRAFFIC MARKERS

1. Above are illustrated two types of traffic Markers, No. 1 shown at the top consists of a heavy steel grating imbedded in the planking with non-abrasive material which makes it a non-skid traffic control marker.

2. Marker No. 2 is a cement tread which is keyed into the surface of the plank.

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Improving Municipal Administration

Current Items from the Public Administration Clearing House

City-County Contracts

LOS ANGELES COUNTY, California, is drawing the attention of governmental students and taxpayers the country over because of its contractual plan for performing governmental duties for cities which makes it possible for them to eliminate certain departments and buy the services instead.

Prof. Frank M. Stewart, University of California political scientist, describes the progress of the arrangement which has been in force for nearly two years, in the January issue of *Public Management*, magazine of the International City Managers' Association. Professor Stewart is a member of the Committee on Governmental Simplification of Los Angeles County and also of the Citizens' Committee on Governmental Reorganization of Los Angeles City. Los Angeles County, he explains, has been authorized by state legislation to assess property and collect taxes for all except first-class cities that elect to secure this service by ordinance. The assessor of Los Angeles County, chosen for a four-year term, assesses all real and personal property in the county and in 38 of its 44 cities as well. The county tax collector, appointed by the County Board of Supervisors under civil service regulations, collects taxes for the county, special districts, improvement districts, and for 38 cities. Los Angeles is one of the cities, paying $22,350 per year for these services. All other cities pay a small percentage of the total amount of money collected.

A civil service enabling act, enacted at the last regular session of the California Legislature, authorized the legislative body of any city to adopt by ordinance a personnel system. Authority is given the legislative body of any city to contract with any other municipality or county within the state or with any state department. Under this law two cities have already signed contracts with the Board of Supervisors for the Los Angeles County Civil Service Commission to perform certain civil service functions for fire and police department employees. Negotiations are under way for a contract with a third city, and others have indicated an interest, according to Professor Stewart.

For 1935-36 the Los Angeles County Health Department had contracts with 36 of the 44 incorporated cities in the county to regulate their health functions. A new law of 1935 has made some important changes with regard to city-county health relationships. Future health contracts made by the county with cities must provide for the repayment to the county of the entire cost of rendering the services to the city. Enforcement of mandatory State Board of Health rules, such as quarantine regulations and vital statistics, is done gratis for the cities.

In the field of police administration there are a few minor contractual relationships. While permissive legislation exists, there are no contracts between the county and cities for fire protection. Library service and maintenance of public buildings are other services contracted for at present.

The chief problem now, according to Professor Stewart, is the ironing-out of what some of the cities consider inequalities of burdens and benefits under the contracts.

Municipal Employees Organize Study Classes

PUBLIC service employees are definitely interested in training themselves on their jobs, if reports from civil service commissions of two cities and one state quoted in the current *Civil Service Assembly News Letter* are a criterion.

A recent annual report of the Civil Service Board of Oakland, Calif., announced that local municipal employees have organized study classes as a result of policy changes inaugurated by the Board. The report adds that particular credit is to be given to the year-old police school, voluntary attendance at which averages more than 90 per cent.

In Jacksonville, Fla., the Civil Service Board announces that employees are showing great interest in preparing themselves for promotional examinations. To assist particularly policemen and fire fighters, the Civil Service Board last month established a library to provide members of the uniformed departments with information on special techniques applying to their jobs and to the duties of supervisory officers. The Jacksonville Civil Service Board plans to develop classes for police and firemen to be financed through the county department of vocational training.

The State Personnel Board of California recently reported that a group of state civil service employees has organized a class to study the principles of public administration. This class is now a part of the adult education program of the Sacramento school system.

Films as Police Aid

NEW police-training films have been made within the last few months in Kansas City, Mo., and Wichita, Kans. These films, which show the "right" and the "wrong" way of making an arrest, how to give first aid in an accident, and other knowledge useful to an officer of the law, are now being used in the training schools of police departments in several other cities.

The feasibility of using films in the police line-up, for identification purposes, is one of the main subjects for discussion on the program of the Interstate Commission on Crime at its meeting in conjunction with the Council of State Governments' Third General Assembly, held in Washington, D. C., on January 21. The idea here is that a brief movie, possibly with sound, will record unmistakable characteristics of the criminal offender more adequately than photographic "stills" or fingerprints. High cost of film apparatus is the main reason that motion pictures have not been used extensively for criminal identification, according to the *Police Chiefs News Letter*.

The Los Angeles Police Department has found the sound camera practicable in preparation of evidence in criminal cases. Shots are made of automobile drivers arrested on intoxication charges, and a sound track is made of their statements. When the interview is flashed on a screen in the courtroom, the charge has infallible support, and the necessity of depending entirely upon the memory and testimony of the arresting officer is eliminated.

Jacksonville, Fla., citizens were recently shown a film in which the cast was made up of known pickpockets and shoplifters. The purpose was to warn against shoplifting particularly during the holiday season. Kansas City, Mo., has prepared and is using two safety films; one shows how adults were killed in Kansas City in 1935 and how to avoid fatal accidents; the other is a safety film for children in the public schools.

A.M.A. to Study Municipal Employee Exemption from Social Security

THE problem of the 2,400,000 state and local governmental employees who are exempt, along with farm hands, domestics and seasonal laborers, from provisions of the Federal-state social security program, will be studied by a special committee appointed by the American Municipal Association.

Andrew W. Joyner, President of A.M.A., said that the study is being undertaken as a result of widespread demand that the Social Security Act be amended, if possible, to include the governmental employees. There are constitutional questions as to whether such groups can be included, Mr. Joyner pointed out, and whether the Federal Government can enforce a levy of payments from either state or local governments for the purpose of social security benefits.

Among possible alternatives which the committee will consider is the enactment of optional laws by which each state separately may provide for public employees within its borders. Whether the states can impose taxes equal to the Federal tax for social security measures upon its political subdivisions, which, in

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turn, would be paid to the Federal Government for annuities; and whether a city can voluntarily pay into the Federal fund an amount equal to the Federal tax and require its employees to contribute a corresponding amount, will be among other questions examined.

Individuals invited as committee members for the study are: William Hodson, Commissioner of Public Welfare, New York City; Morton L. Wallerstein, Executive Secretary, League of Virginia Municipalities, Richmond, Va.; and Arthur C. Meyers, Director of the Budget, St. Louis, Mo.

Advisory Service in Municipal Accounting

PROBLEMS that puzzle citizens and those who hold municipal purse-strings will be brought out into the open and given expert attention through a service just inaugurated by the Municipal Finance Officers' Association of the United States and Canada.

As announced by Carl H. Chatters, Executive Director of the Municipal Finance Officers' Association, an advisory service in municipal accounting will be made available in cooperation with the state leagues of municipalities and national organizations that want improved municipal accounting and reporting. Municipal leagues now exist in 4 states and represent a total of 7,000 cities. The advisory service will be given at the specific request of any city or village. It will utilize the standards developed by the Association's accounting committee and the National Committee on Municipal Accounting. The Association staffs will, on request, review the financial reports of local officials and give them a statement of how closely they conform to these standards and will give a bill of particulars telling how they may be improved.

Bureau of Municipal Research for Newark, N. J.

THE Newark (N. J.) Chamber of Commerce has decided to set up a Bureau of Municipal Research. It has selected as the Director of this new Bureau, Loren Miller, who for the past seven months has been a member of the staff of the Municipal Finance Officers' Association. Mr. Miller was formerly a member of the staff of the Citizens Advisory Finance Committee of Newark, of which Howard G. Fishack is the Executive Director. The establishment of the Bureau in the Chamber of Commerce of course does not mean that the Finance Committee will be discontinued.

The new Bureau will be concerned with problems of the city of Newark and Essex County, other than financial, and will probably undertake a considerable amount of education work.

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Central Planning Agency Recommended by President's Committee on Administrative Management

AMONG the important recommendations on "Administrative Management in the Government of the United States" contained in a report under that title submitted to President Roosevelt on January 8 by the President's Committee on Administrative Management, was the creation of a permanent National Resources Board to serve as a central planning agency under the President and to take over and enlarge the work now being carried on by the National Resources Committee. The Board would consist of five members appointed by the President, without salary and with indefinite terms, and with ample provision for the maintenance of a staff equal to the performance of the heavy task imposed upon it.

"The first function of such an agency," says the Report," is to serve as a clearing house of planning interests and concerns in the national effort to prevent waste and improve our national living standards. Another is to cooperate with departmental, state, and local agencies, and in general to use the Board's good offices to see that planning decisions are not made by one group in ignorance of relevant undertakings or research going on elsewhere. Obviously, much of this is a matter of diplomacy and intelligent interest rather than of legal authority and high command.

"Another function is that of collecting and analyzing data relating to our national resources, both human and physical, and of shaping up advisory plans for the better use of these resources. The gains of civilization are essentially mass gains. They should be distributed as fairly as possible among those who created them. But a frequent recurrence to fundamental principles is necessary. Unless some overhead central agency takes an overall view from time to time, analyzes facts, and sugests plans to insure the preservation of the equilibrium upon which our American democracy rests, there is danger that it will be badly upset. It is important that the Executive have at hand ample ways and means of taking such an overall view of the best and highest use of the national assets which we have inherited from our fathers and which we aim to hand on to posterity, enlarged and enriched by our efforts."

Recent City Manager Appointments

CHARLES F. Harper, a local business man, was appointed City Manager of Portsmouth, Va., on December 23, to succeed E. B. Hawks.

S. S. King, former Manager of Rome, Ga., from 1919 to 1933, was reappointed Manager of that city on January 5. He succeeds O. M. Lanham.

Arthur P. Noyes, City Engineer for the past nine years, has been appointed City Manager of Santa Rosa, Calif, to fill the vacancy created by the death of Fred C. Steiner.

CLARENCE E. RIDLEY,
Executive Director, International City Managers' Association.

The Municipal Bond Market

Recent sales of new issues from January issues of *The Bond Buyer*:

Amount	Borrower and Purpose	Rate (%)	Term (Years)	Basis (%)
$120,000	Dane Co., Wis., Highway Garage Bldg.	2	2.5 Avg.	1.20
164,000	Jefferson Co., Ohio, Poor Relief.....	1.5	4 Avg.	1.48
210,000	St. Joseph Co., Ind., Airport.....	2	4.5 Avg.	1.92
644,000	Albany Co., N. Y., Refunding.....	2.25	10.5 Avg.	2.02
175,000	Corning, N. Y., Bridge.....	2.10	10.16 Avg.	2.07
1,053,000	Maryland, State Roads Commission...	2.25	8.33 Avg.	2.14
200,000	Stevens Pt., Wis., High School.....	2.25	12.5 Avg.	2.22
756,000	Rhode Island, Public Works of 1935..	3	28 Avg.	2.25
111,000	Pickens Co., S. C., Highway.....	4	4.85 Avg.	2.39
165,000	Mount Vernon, N. Y., School Library.	2.80	13.8 Avg.	2.76
112,000	Webster, N. Y., Water.....	2.80	20.5 Avg.	2.77
560,000	Chester Co., S. C., Highway.....	3	8-17 Ser.	2.84
128,000	Verona, N. J., Sewage-Treatment Plan	4	9 Avg.	2.87
134,000	Florham Park, N. J., Water Refunding	3	10.75 Avg.	3
275,000	Hammond, Ind., Park District.....	3.5	2-26 Ser.	3.11
150,000	East Smithfield Water District, R. I...	3.75	17.66 Avg.	3.62
225,000	University of North Carolina, Physical Education and Dormitory Bldgs.....	4	12.16 Avg.	3.76
147,000	Sacramento Co., Calif., American River Flood Control District.....	4	18.25 Avg.	4.12
120,000	South River, N. J., Sewer.....	4.3	1-24 Ser.	4.295
152,000	El Centro, Calif., Sewer Line.....	4	1-19 Ser.	4.40
200,000	Long Beach, N. Y., Land Purchase...	6	1-10 Ser.	6

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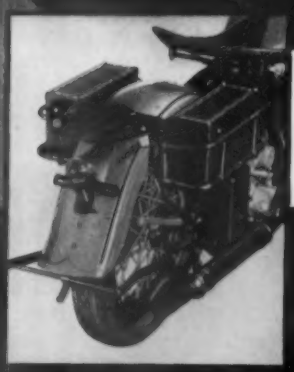

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Zoning and Planning Notes

From Data collected
by the Zoning Committee
of New York
(233 Broadway)

A Great Advance in City Planning Law

The Highest Court in the State of New York Upholds Official Map Legislation

LAST month we expressed the hope that a great victory had been achieved in the courts for city planning. Word had been received that the decision of the case of*Headley v. City of Rochester* by the Court of Appeals of the State of New York sustained the official map law of the state, but the opinion of the Court had not been handed down. That opinion has now been received, and it fulfills our hopes. A great victory for city planning has indeed been attained.

For many years a major obstacle to the spread of city planning in this country has been the lack of any legal method which was practicable, of making sure that a city plan when officially adopted could be carried out as made. Two methods of obtaining this result in regard to the street map—perhaps the most important part of the plan—had been suggested: the one by making use of the power of eminent domain, with compensation; the other by employing the police power, without compensation. But for doubts entertained by some as to its constitutionality, it was generally felt that the police power method was the more practical and effective.

In 1926 the state of New York passed an official map law for the establishment of a street map, and certain other features of an official plan under the police power. Since then the law has gradually come into use in New York State and has been slowly spreading to other states.

Under our system of government, novel legislation, however carefully drawn, is not of assured validity until it has won the approval of the courts. In *Headley v. City of Rochester** the New York Court sustains the provision of new law for the establishment of the official street map as applied to the circumstances in that case. It does not uphold this provision as applied to other circumstances that may arise in the future; nor does it pass upon the other features of the law. As a rule, judges do not, and these judges did not, decide anything but the precise question before them; but here, as so often occurs, the reasoning of the Court is an exposition of their point of view, and we may with some confidence expect that, under circumstances in which we may rightfully wish it, and as applied to most if not all of the important provisions of the law, it will in due time be upheld in New York; that similar legislation, enacted in other states, will win similar approval, and that city planning in future will be more widespread and more effective in this country than ever before.

The decision is so important that significant excerpts are given below:

Excerpts from the Decision

"The mere adoption of a general plan or map showing streets and parks to be laid out or widened in the future without acquisition by the city of title to the land in the bed of the street can be of little benefit to the public if the development of the land abutting upon and in the bed of the proposed streets proceeds in a haphazard way without taking into account the general plan adopted and, especially, if permanent buildings are erected on the land in the bed of the proposed street which would hamper its acquisition or use for its intended purpose. So long as the owners of parcels of land which lie partly in the bed of streets shown on such a map are free to place permanent buildings in the bed of a proposed street and to provide private ways and approaches which have no relation to the proposed system of public streets, the integrity of the plan may be destroyed by the haphazard or even malicious development of one parcel or tract to the injury of other owners who may have developed their own tracts in a manner which conforms to the general map or plan.

"A statutory requirement that a city must acquire title to the land in the bed of the streets shown on the general map or plan, and provide compensation for the land taken, would create practical difficulties which would drastically limit, if, indeed, they did not render illusory, any power conferred upon the city to adopt a general map or plan which will make provision for streets which will be needed only if present anticipations of the future development of the city are realized. On the other hand, to leave the land in private ownership, and, without compensation to the owner, incumber it with restrictions upon its use which would result in diminution in its value might be inequitable and perhaps even beyond the power of the state.

"To meet the difficulty, the Legislature has provided in section 35 of the General City Law that 'For the purpose of preserving the integrity of such official map or plan no permit shall hereafter be issued for any building in the bed of any street or highway shown or laid out on such map or plan, provided, however, that if the land within such mapped street or highway is not yielding a fair return on its value to the owner, the board of appeals or other similar board in any city which has established such a board having power to make variances or exceptions in zoning regulations shall have power in a specific case to grant a permit for a building in such street or highway which will as little as practicable increase the cost of opening such street or highway or tend to cause a change of such official map or plan, and such board may impose reasonable requirements as a condition of granting such permit, which requirements shall inure to the benefit of the city.'

"The sole complaint of the plaintiff is that so long as that section remains in force the effect of the ordinance adopted by the city is to restrict the use to which the plaintiff may put his land in the bed of the street and to that extent constitutes a taking of his property, and that, since the city is not required to pay any compensation to him unless or until at some time in the indefinite future it may choose to take title to the land, the effect of the ordinance is to deprive him of his property without due process of law.

"Not every restriction placed by authority of the state upon the use of property for the general welfare of the state without payment of compensation constitutes a deprivation of property without due process of law. This Court has sustained a reasonable restriction upon the height of signs on roofs, saying: 'Compensation for such interference with and restriction in the use of property is found in the share that the owner enjoys in the common benefit secured to all.' (*People ex rel. Wineburgh Advertising Co. v. Murphy*, 195 N. Y. 126-131.) Under the provisions of the General City Law the owner of land in the bed of the street shown in a map remains as free to alien the land or to use it as he sees fit as he was before the map was adopted, except in one respect. If he desires to improve the property by erecting a building for which a permit is required, the grant of such a permit is surrounded by drastic conditions or restrictions which will in many cases act as an obstacle to such use of the land. . . .

"A statute cannot have the effect of depriving a person of his liberty or property unless it prevents such person from doing an act which he desires to do or diminishes the enjoyment or profit which he would otherwise derive from his property. (Cf. cases collated in the separate opinion of Mr. Justice Brandeis in *Ashwander v. Tennessee Valley Authority*, 297 U. S. 288, at pp. 345-349.) There are approximately nineteen thousand feet in the plot owned by the plaintiff. The single dwelling house upon it is ninety-five years old and is now in course of demolition. By its adoption of the general map or plan, the city has given notice that at some future time, if present anticipations are realized, it intends to widen the two streets upon which the plaintiff's property abuts. If without building upon the strips of his land which may in the future be included in the widened streets, the plaintiff's property cannot be developed in manner which the plaintiff desires, or which would best conduce to the enjoyment or profit which an owner might derive from his land, and if it were shown that the statute if valid would require or even justify a denial of a permit for such development, the adoption of the map might constitute a grievance. In the absence of proof of such facts, it is difficult to see how the plaintiff has been deprived in any manner of the use of his property. Before the Court should even consider the question of whether the Legislature could under the police power restrict, without compensation, the use of land in private ownership, there should be proof at least that the statute is in some manner interfering with or diminishing the value of the present property rights of the person complaining. (Compare in this respect the allegations contained in the complaint upon which the Supreme Court of the United States based its jurisdiction to consider such question in *Village of Euclid v. Ambler Realty Co.*, 272 U. S. 365, 368, 374) . . .

"Whether the state may impose conditions for the issuance of permits in order to protect the integrity of the plan of a city where it appears that such conditions interfere with a reasonable use to which the land would otherwise be put or diminish the value of the land, should not now be decided. Without proof that the imposition of such conditions has deprived an owner of land of some benefit he would otherwise derive from the land, there can be no deprivation of property for which compensation should be made.

"Solicitude for the protection of the rights of private property against encroachment by government for a supposed public benefit does not justify the courts in declaring invalid a public law which serves a public purpose, because ten years after it has been on the statute books a single owner, without proof, or even claim, of actual injury, asserts that he has been deprived of his property."

* 272 N. Y. 197 and 5 N. E. (2d) 198.

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OLD MAN WINTER is now in his glory furnishing all and sundry with a variety of pleasures.

Those more fortunate souls who may pick their weather by going to warmer climes are enjoying the pleasures of summer sports such as depicted in the beach scene above. Less fortunate souls can still derive pleasure in colder climes by sled riding, skiing, or just enjoying the varied winter scenery, particularly by sunlight or moonlight.

From our many friends in the water works field, we realize that their greatest pleasures are derived from surmounting difficulties which Old Man Winter thrusts upon them. It is true that colder weather in many cases eliminates completely all taste and odor troubles, but all operators are not so fortunate.

Stream flows at this time of year are smaller than usual, thus accentuating pollution troubles, because of the low dilution factor. Sewage and trade waste contamination can be particularly troublesome under such conditions. Algae troubles, although considerably minimized, are still present occasionally, and may cause difficulty, particularly if reservoirs are frozen over. Snow often gives a characteristic flavor to water, necessitating treatment. The water works fraternity derives pleasure from the fact that they can overcome these and other difficulties with POWDERED AQUA NUCHAR.

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Accidents

City held not liable for injury to spectator at exhibition at municipal airport operated by third party (Texas Court of Civil Appeals: *Christopher v. City of El Paso*, 98 S. W. 2d, 394).

Police ambulance's right-of-way at street intersection held dependent upon giving audible warning of its approach (California District Court of Appeal: *Mastro v. City of San Diego*, 62 Pac. 2d 407).

Notice that pedestrian fell into a hole "in the street on Fulton Street, at or near its intersection with Richmond Street," held to sufficiently specify place of accident (New York Supreme Court, Appellate Division: *Knight v. City of New York*, 201 N. Y. Supp. 291).

Bond Issues

Bonds issued primarily to benefit property of private corporations held void (Florida Supreme Court: *State v. Town of Bellair*, 170 So. 434).

"Date of issue" of bonds, as affected by requirement as to maturities, held not date when bonds were signed, sold or delivered, but the date stated in the bond, although that was one year earlier than date of signing, sale, etc. Arkansas Supreme Court: *Whetstone v. City of Stuttgart*, 97 S. W. 2d, 641).

Civil Service

Purported discharge of policemen held void for want of proper proceedings, entitling them to salaries during the period of wrongful removal (Texas Supreme Court: *City of Dallas v. McDonald*, 98 S. W. 2d, 167, affirming 69 S. W. 2d, 175).

Civil service employee suspended on ground of lack of work held entitled to reinstatement if replaced by WPA workers (New York Supreme Court, New York County: *Liebowitz v. Goldwater*, 291 N. Y. Supp. 222).

Contracts

Municipal contractor's mere purchase of materials or supplies from municipal officer held not to vitiate contract or expose official to ouster (Kentucky Court of Appeals: *Commonwealth v. Wither*, 98 S. W. 2d, 24).

Contract to supply city with electric energy for distribution by it for ten years held valid as a contract for "commodities or service," which the council could award under the city charter without a referendum, and not a "purchase of property," which would have required a referendum (Minnesota Supreme Court: *McNaught v. City of St. James*, 269 N. W. 897).

Garbage Collection

City's assumption of the collection and disposal of garbage upheld as proper exercise of the police power for the protection of the public health (California District Court of Appeal: *Glass v. City of Fresno*, 62 Pac. 2d, 765).

Judgments

Judgment creditor of city held not entitled to enjoin city from disbursing certain funds sought to be subjected to the judgment (United States Circuit Court of Appeals, Fourth Circuit: *City of Wheeling v. John F. Casey Co.*, 85 Fed. 2d, 922).

Licenses

Refusal of licenses to druggists and other retail merchants to conduct eating places upheld (Massachusetts Supreme Judicial Court: *Liggett Drug Co. v. Board of License Commissioners*, 4 N. E. 2d, 628).

Ordinance imposing license tax on dealers in coal and coke, based on tonnage capacity of vehicles used, upheld as not violating the interstate commerce clause of the Federal Constitution nor a statutory prohibition against municipal motor-vehicle license taxes, etc. (West Virginia Supreme Court of Appeals: *Lewis v. City of Bluefield*, 188 S. E. 237).

Mandamus Proceedings

Mandamus proceedings held not to be proper means of determining the right of a judgment creditor to interest on a judgment in his favor (California District Court of Appeal: *McPherson v. City of Los Angeles*, 62 Pac. 2d 751).

Municipal officers attempting to thwart mandamus writs addressed to municipalities held punishable as for contempt of court (Florida Supreme Court: *State v. City of Live Oak*, 170 So. 608).

Municipal Debts

As between creditors of municipality one first suing to compel payment out of a municipal fund held entitled to have prior right of payment, despite a voluntary effort of the municipality to earmark the fund for another creditor (Florida Supreme Court: *State v. City of West Palm Beach*, 170 So. 697).

Municipal Organization

By long recognizing the existence of a municipality, through state and county officers, held that the state may be estopped to challenge the legality of the municipality's organization (Oklahoma Supreme Court: *State v. Condren*, 62 Pac. 2d, 635).

Municipal Utilities

Cities held without implied power to deal in such articles as fuel, milk, food, gasoline and other necessities of life as a means of preventing profiteering by monopolies (Utah Supreme Court: *American Petroleum Co. v. Ogden City*, 62 Pac. 2d, 557).

Taxpayers and consumers held not entitled to sue to enjoin water-works project to be financed out of plant revenues (Illinois Supreme Court: *Price v. City of Mattoon*, 4 N. E. 2d, 850).

Officers' Liability

Municipal officers held not liable as for malicious prosecution under ordinance because accused had been previously convicted of the same offense (California District Court of Appeal: *Malone v. Carey*, 62 Pac. 2d, 166).

Official Bonds

City held entitled to recover on bond of deputy city clerk as a statutory obligation although his office was created by city commissioners (Oklahoma Supreme Court: *Oklahoma City v. Century Indemnity Co.*, 62 Pac. 2d, 94).

Official Malfeasance

Village trustee held not to have violated statutes forbidding individual interest in contracts, etc. (New York Supreme Court, Appellate Division: *In re Wolfe*, 290 N. Y. Supp. 970).

Ordinances

Registration held not essential to status as "voter" under statute requiring city commissioners to reconsider ordinance on petition of a certain number of voters (Kentucky Court of Appeals: *City of Covington v. Miller*, 98 S. W. 2d, 293).

Pensions

Municipal pensioners held not to have such vested rights as to prevent such increase or decrease of pensions as circumstances may demand (California District Court of Appeal: *Murphy v. City of Piedmont*, 62 Pac. 2d, 614).

Police Regulations

Ordinances forbidding posting of notices, etc., on buildings without consent of owners upheld (Illinois Appellate Court, First District: *City of Chicago v. Bernstein*, 4 N. E. 2d, 657).

Ordinance forbidding hawking of newspapers on streets, etc., between 9 P. M. and 7 A. M., but permitting sales at stands, etc., held void as being unreasonable and unjustly discriminatory (New York Court of Appeals: *People v. Kuc*, 4 N. E. 2d, 939).

Public Utilities

Three per cent excise tax on gross income of utilities operating in city upheld, despite inability of taxpayer to pass it on to consumer, despite additional gross income obligations, etc. (United States District Court, *Southern Boulevard Railroad Co. v. City of New York*, 16 Fed. Supp. 599).

Purchases

Where warrants issued for fire apparatus were invalid for city's failure to provide tax levy for interest and sinking-fund, seller of apparatus held entitled to recover apparatus and reasonable rental for use, plus interest, less payment received (United States District Court, Northern District: *American La France & Foamite Industries v. City of Floydada*, 15 Fed. Supp. 390).

Salaries

Indorsement on fireman's salary check reciting payment in full of salary due held to bar subsequent claim on account of deductions to which fireman assented (Georgia Court of Appeals: *Barfield v. City of Atlanta*, 187 S. E. 407).

Special Assessments

A tract of land lying between parallel streets and treated as one lot held assessable for improving one of the streets, where it could not be divided without impairing its value, although the same tract may be assessed later for improving the other street (Kentucky Court of Appeals: *Peters v. City of Morehead*, 98 S. W. 2d, 41).

Special assessments against abutting property for street lighting upheld (California Supreme Court: *Roberts v. City of Los Angeles*, 61 Pac. 2d, 323).

Contract between city and State Highway Department for establishment of state highway through city held not violative of city's charter powers (Georgia Supreme Court: *Jackson v. City of Rome*, 187 S. E. 386).

Special Improvements

City held liable to holder of special improvement warrant for loss resulting from City Treasurer's depletion of improvement fund through second payment of another warrant (Montana Supreme Court: *Blackford v. City of Libby*, 62 Pac. 2d, 216).

Streets

Town's street improvement project, eliminating dangerous railroad grade crossing and diverting through traffic in congested section, upheld (Tennessee Supreme Court: *Darwin v. Town of Cookeville*, 97 S. W. 2d, 838).

Village Planning Commission's attempt to establish a street layout through a privately owned tract without proceeding to acquire land for the streets and without intention to do so in the future held invalid (New York Supreme Court, Nassau County: *Caperton v. Village of Lawrence*, 290 N. Y. Supp. 1016).

Taxation

Where owner of contiguous lots uses them as a single tract, held that they may be so assessed for taxation (Texas Court of Civil Appeals: *City of Edinburg v. Magee*, 97 S. W. 2d, 983).

City sales tax being direct obligation of dealer, held that city's claim against dealer's insolvent estate for taxes collected from purchasers but not paid over was entitled to preference as being for a "tax" (New York Supreme Court, Appellate Division: *In re Rockaway Paint Centre*, 291 N. Y. Supp. 341). Ed. Note.—The Court cites *In re Lazaroff*, 84 Fed. 2d, 982 (U. S. C. C. A.) as only known case holding the contrary.

Water Supply

City held liable for flooding of private premises due to neglect to repair defective water service pipe under control of city although belonging to consumer (Ohio Court of Appeals, Huron County: *Seeley v. City of Norwalk*, 4 N. E. 2d, 403).

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Water Pollution

The Water Pollution Research Staff of the Department of Scientific and Industrial Research, London, England, publishes each month a pamphlet of abstracts of current literature on subjects related to water pollution. The January, 1937, issue contains material on water supplies, analysis and examination of water, sewage, trade waste waters, pollution of natural waters, and a few miscellaneous subjects. 36 pp. 2s net; annual subscription 24s. (Apply to H.M. Stationery Office, Adastral House, Kingsway, London, W.C. 2. England.)

Municipal Reports

For the last ten years the *National Municipal Review* has been making appraisals of municipal reports. In the January, 1937, issue of that magazine, Clarence E. Ridley has taken stock of ten years of progress in public reporting, in his article entitled "Annual Appraisal of Municipal Reports." There have been many changes in quality and quantity. Reports are becoming less detailed and dull, and more graphic and readable. Each year more reports are issued, the number having jumped from 55 to 74 in this last year; and each year a larger number achieve a minimum rating on 20 points of judgment covering date of publication, physical make-up and content. 5 pp. (Apply to National Municipal League, 309 E. 34th St., New York.)

The New Jersey Taxpayers Association, which is conducting a contest for modernized municipal reports in New Jersey, has published a pamphlet entitled "Making Municipal Reports Readable." The reasons for public reporting and the expectations of the public from the report are analyzed, and the possible types of style and content to satisfy these reasons and expectations are presented in detail with illustrative charts. 28 pp. (Apply to New Jersey Taxpayers Association, Broad Street Bank Building, Trenton, N. J.)

Tax Rates

In the December, 1936, issue of the *National Municipal Review* appears an article entitled "Comparative Tax Rates of 259 Cities, 1936," by Rosina Mohaupt. A complete tabulation of the cities is given, as well as a general summary and analysis of the trends indicated. In the tabulation the cities are arranged in order of population by the five census groups. The succeeding columns report the total assessed valuation, the respective percentages of realty and personalty represented in the total assessment, the date the city's fiscal year begins, the first date city taxes are subject to penalty, the number of installments in which city taxes are payable, the tax rates per $1,000 assessed valuation, showing separately the rates for city, school, county, and state purposes, and the total, and, finally, the best judgment as to what the total tax rate would be if all the assessments of all the cities were made by a single assessor or by uniform assessing standards at full value, giving the estimated per cent ratio of assessed value to legal basis and an adjusted rate. Miss Mohaupt points out that the 1936 figures given show an increase in both the total tax rate and the adjusted tax rate over 1935. 14 pp. (Apply to the National Municipal League, 309 E. 34th St., New York.)

Health

Charles V. Craster, Health Officer, Newark, N. J., states that the city of Newark has made the six depression years red letter years in freedom from disease and preventable mortality. The "Health Review for the City of Newark Covering the 'Depression Years', 1930-1935" begins with a study of social and economic problems and their relationship to health. All new developments of the six depression years are analyzed. Then follow special tables of health statistics and a financial report. The remainder of the publication is devoted to the many divisional reports of the Health Department. 53 pp. (Apply to Department of Health, Newark, N. J.)

Industrial Surveys

A year ago, Frank J. Taylor, Comptroller of the City of New York, appointed Charles E. Murphy to investigate reports that manufacturers were leaving New York City on a large scale. Mr. Murphy has just issued the first phase of his "Report to Hon. Frank J. Taylor, Comptroller of the City of New York, on Industrial Survey of New York City," the second and third to follow. In this first section he outlines his procedure in making the survey. He studied all the national statistics relative to industrial migration and then concentrated on interviews with all those who have been close to these movements, business and labor leaders, railroads and leading business executives. Then lists of departed manufacturers and new arrivals were drawn up, and the departed manufacturers were interviewed for their reasons for leaving, and the new arrivals for their reasons in coming. The data were then correlated. The answer to the first phase of the investigation, "Is there a general departure of manufacturing establishments from New York City?", is "Definitely no." This first section presents several charts illustrating the results ascertained, and the succeeding reports will give the full analysis of the reasons for any removals of industry, and possible measures to prevent any such trend. 19 pp. 6 charts. (Apply to Charles E. Murphy, 280 Broadway, New York.)

The New Orleans Association of Commerce has published "A Survey of the New Orleans Industrial Zone." All the advantages of this city for manufacturing and distribution are faithfully presented. At the outset, New Orleans' markets, foreign and domestic, are analyzed. Then her natural resources and raw materials and the industries based on them are enumerated. New Orleans is a great city for the importation of raw materials such as crude rubber from South America, and a good many industries have grown out of these imports. Labor is not highly organized in New Orleans, nor are the labor laws very strict. Transportation facilities are extensive and varied. Power is abundant, in natural gas, fuel oil, electricity and coal. The Mississippi is sufficient assurance of an inexhaustible water supply. The Association of Commerce is quite confident of the suitability of New Orleans for considerable industrial expansion. 29 pp. (Apply to Association of Commerce, Bryan Bell, President, New Orleans, La.)

Power of Investigation

"The Municipal Power of Investigation," by Sophia A. Olmsted, is a 5-page article reprinted from the November, 1936, *National Municipal Review*. Very few cities have blessed their administrative departments with the full power of investigation. Most judicial and legislative branches have this far-reaching power, but New York City is almost unique in the powers it gives to the Department of Investigation and Accounts. The new charter continues these powers, providing for a commissioner of investigation appointed by the mayor and that "the commissioner shall make any investigation directed by the mayor or the council." Thus with a staff available, special appropriations for investigations are not necessary, with their attendant arguments and delays. (Apply to National Municipal League, 309 E. 34th St., New York.)

Shade Trees

The Proceedings of the 1936 Annual Meeting of the National Shade Tree Conference have been recently published. The Conference, which took place on September 2, 3, 4, was held in Boston, Mass. The many papers presented concerned the damaging effect of lightning, frost crack, various insects, and many different diseases on trees; several possibilities for dealing with pests and diseases; and several discussions of shade tree legislation. At the end of this report appears a bibliography prepared in the Library of the Massachusetts Horticultural Society on the care of trees. xii + 213 pp. (Apply to National Shade Tree Conference, New Jersey Agricultural Experiment Station, New Brunswick, N. J.)

Greenbelt Towns

The Resettlement Administration has issued an illustrated pamphlet "Greenbelt Towns," to clarify any vague conception of the ideals and the practical carrying-out of these undertakings. After an avowal by the Resettlement Administration of the basic program, a description is given of its activities toward putting houses and land and people together in such a way that the props of our economic and social structure will be permanently strengthened. The idea has been tested in England in the form of the well-known Garden City and has proved successful. Bad planning means waste, ugliness, congestion; disease, suffering, and crime. New housing in well-planned areas has long been recognized as a public responsibility in other nations, and it must be recognized as such here. A description is given of how a greenbelt town is built: the choosing of the site; the planning of the town with its houses, its business centers, its community centers, its belt of green; and, finally, its administration and management. 32 pp. (Apply to the Resettlement Administration, Washington, D. C.)

Planning

In preparation for a program on all phases of the problem of development and use of land, water and other natural resources of Oklahoma in their physicial, social and governmental and economic aspects, a preliminary report has been issued by the Oklahoma State Planning Board, necessarily factual, and setting forth some of the outstanding topics for research as a basis for future planning. This is presented in 295 photo offset pages, with folding map, and many other maps, charts, tables and photographs. It is a WPA Assistance Project of the Board. An illuminating brief history of the state brings recognition of the fundamental elements of planning started in the past, on which future development may build. Further divisions of the survey include: population; land use; occupations, industry, mineral resources; transportation; state public institutions; conservation by state departments; educational services by state departments; public improvements; Federal agencies; relief; and planning in the state. The first six months of operation of the Board are covered in this elaborate, detailed, painstaking report. (Apply to the Oklahoma State Planning Board, State Capitol, Oklahoma City, Okla.)

"A Planning Forum" is the title of a new monthly publication of the Massachusetts State Planning Board. It has been designed to meet the universal request of local planning boards throughout the state for regular information concerning planning and zoning activities, current publications, court decisions, legislation and any other matters which might affect their communities. In the first issue, dated December, 1936, we find a summary by William Stanley Parker of the twelve regional meetings called by the Massachusetts State Planning Board as a first step in establishing local contacts. The next number will deal with the latest planning legislation in Massachusetts. A final section of this first issue which will be repeated in succeeding issues is a digest of "Planning Progress in Massachusetts," a current events page. Also, a list of the individual members of the local planning boards is given in this number. 24 pp. (Apply to the Massachusetts State Planning Board, Room 24, State House, Boston, Mass.)

New York Almanac

The WPA Federal Writers' Project has been working on an "Almanac for New Yorkers, 1937," which has just been published by Simon and Schuster. The 128-page volume boasts of a map of city highways, many illustrations, light verse in modern style, and a great deal of useful and entertaining information. Many well-known poets, novelists and artists became sufficiently interested to serve on the editorial board of this project under the direction of Frank Shay. (Apply to Federal Writers' Project, WPA of New York City, 10 E. 39th St., New York.)

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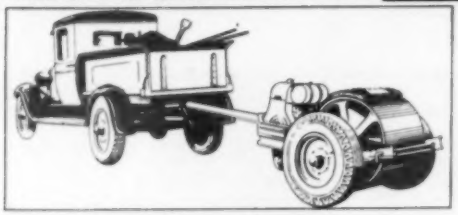

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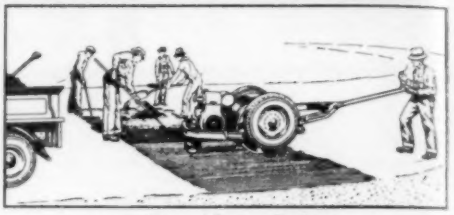

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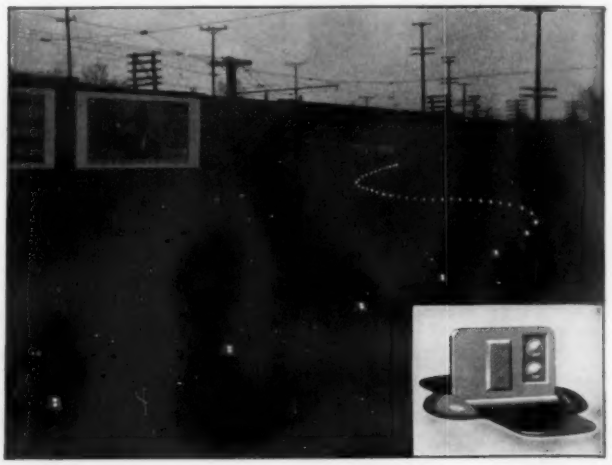

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The Land Question

The Theory of the Land Question.—By George Raymond Geiger, Ph.D., formerly of the Department of Philosophy, University of Illinois, The Macmillan Co., New York. 1936. *ix* + 237 *pp.* $2.00 *from* THE AMERICAN CITY.

It sometimes seems strange that in the growing heat of contemporary economic discussion the significance and meaning of the land question are so often overlooked. This fact has proved sufficiently distressing to such an able theorist as Dr. Geiger to urge the writing of this new book for the express purpose of reminding present-day controversialists that the land question lies at the very base of their discussions pro and con of capitalism, socialism, communism, and any form of economic planning. The first chapter, entitled "The Meaning of the Land Question," extricates the wide economic sense of the problem from the confusion of its specialized manifestations in AAA, TVA, farm relief, and other problems of the poor farmer. Land is as significant in a highly organized urban industrial economy as it is in farming; it performs a basic function in the production and distribution of all wealth. "Land Value," the second chapter, makes clear the origin of this value and its uniqueness in relation to other kinds of value. The third chapter, "Land and Capital," should fill with distinct embarrassment any economist who has made the grave error of confusing land and capital, the irreproducible and the reproducible factors of production respectively. Chapter IV is an answer to the need for a general history of the land question, entitled "Historical Aspects of the Land Question." The fifth chapter presents the proposed suggestion for resolving the difficulties incumbent upon private control of land. "Socialization of Land Rent through Taxation" is its self-explanatory title. Finally, Dr. Geiger includes an epilogue which is essentially an appeal to liberal and radical leaders for adequate consideration of the land question.

Subdivision Regulations

The Advisory Committee on City Planning and Zoning of the National Bureau of Standards of the Department of Commerce prepared some time ago "Model Subdivision Regulations, a Guide for Local Planning Commissions in the Preparation of Local Regulations Governing the Subdivision of Land." Since the Committee has been discontinued, the National Resources Committee undertook recently to have this useful study published. These subdivision regulations assume that a planning commission, by the adoption of the major thoroughfare plan or performance of other conditions imposed by a state enabling act, has attained power to formulate and enforce subdivision regulations. The publication is divided into 6 sections: "Procedure"; "General Requirements and Minimum Standards of Design"; "Development Prerequisite to Final Approval"; "Preliminary Plat"; "Final Plat"; and "Definitions." iv + 26 pp. (Apply to the National Resources Committee, Washington, D. C.)

Thoroughfare Plan

The Regional Planning Commission representing the various municipalities of Hamilton County, Ohio, has been functioning since 1929. A number of studies have taken up its time since then which are valuable guides in coordinating public improvements undertaken by the various political subdivisions of the county. "Report on the Plan of Main Thoroughfares for Hamilton County, Ohio" is the latest work of the Commission, and is a result of a good many detailed studies and investigations which are presented along with the plan itself. Included in the contents of this publication are studies of present traffic conditions, estimates of future needs, many recommendations as to the best avenues of change and growth, and a program for carrying out the new plan. There are numerous maps, diagrams and tables, including a complete tabulation of specific recommendations of the thoroughfare plan. The greatest need revealed by the study is for direct, continuous, cross-country routes. The few existing cross-country routes, for the most part, comprise disjointed sections of various county roads and city streets with numerous jogs, dead-ends and steep grades. And the location of the few river crossings of the Ohio force an inordinately large amount of traffic through the central business district. 126 pp. (Apply to the Regional Planning Commission, Cincinnati, Ohio.)

Tax Limitation

The Advisory Committee of the New York State Conference of Mayors and Other Municipal Officials has prepared a memorandum on the Amended Crawford-Rapp Constitutional Municipal Tax and Debt Limitation Proposal, entitled "For Sale—A Tax Gold Brick." This pamphlet points out that the real object of tax limitation is not genuinely concerned with tax reduction but with the ulterior motive of forcing a shift in the tax load, generally from property taxes to new consumer taxes. In Michigan a certain group even forced to a vote a proposal to abolish all taxes on property in that state.

Although the property tax has its faults, the opinion is expressed in this report that the charges against it should only point to a modernization of its administration, not to its abolition. There is no other form of revenue which is sufficient to supply the needs of local government, nor is there any other tax which is relatively so steady in its receipts. Also, it is one of the few taxes which lends itself satisfactorily to local administration. And the most compelling justification for this type of tax is that many of the services of municipal government are of more value to real property than to any other forms of wealth. 26 pp. (Apply to the New York State Conference of Mayors, Albany, N. Y.)

Federal-City News

"Federal-City News" is a new publication in answer to a demand for a formal news bulletin devoted entirely to timely and authoritative information covering the special field of Federal-City matters. Since 1932, the cities have been brought more and more into contact with the Federal Government, and it is highly necessary for municipal officials to have the facts regarding the many new Federal activities which concern them so closely. "Federal-City News," edited by Paul V. Betters and published by the United States Conference of Mayors, should be the perfect medium through which to present the many administrative regulations, orders, court decisions, etc., which ought to be brought to the attention of the larger municipalities of the United States. The first issue, appearing on January 9, 1937, contains brief items with the explanatory titles: "Interest on Municipal Deposits"; "Collusion in City Buying"; "Federal Highway Funds"; "Savings on Coal Freight Rates to Cities"; "Housing to the Front Again"; "Supreme Court Decisions"; "Continuation of WPA"; and "With Your Editor on the Relief Situation." 8 pp. One year, $15, two years, $25. (Apply to the United States Conference of Mayors, 730 Jackson Pl., Washington, D. C.)

Public Works Engineers

Each year the American Society of Municipal Engineers and the International Association of Public Works Officials have assembled and published the Proceedings of their annual conventions. In order to increase the usefulness of the material contained in the more recent of these volumes, the American Public Works Association has published an "Index to Proceedings, 1918 to 1936: American Society of Municipal Engineers; International Association of Public Works Officials." These organizations have shifted titles a number of times, and the different names of the different annual volumes are indicated. The latest change has been the consolidation of the two organizations under the name American Public Works Association, January 1, 1937. x + 70 pp. (Apply to American Public Works Association, Chicago, Ill.)

Social Work

The Civic Research Institute of Kansas City, Mo., has published a "General Study of Cost and Volume of Social Welfare Activities in Kansas City, Missouri," by Margaret Klein. It is the first attempt made in this city to make a complete survey of the cost and volume of *all* social welfare activities, both public and private. The purposes of this study are: to present a handbook of information concerning public and private welfare activities in Kansas City; to give the public an accounting as to the work, cost and results of the municipal and private agencies; to give the single organizations a picture of the whole of which they are a part; and to encourage the keeping of uniform records for public information. The survey includes the financial and service statements of all known organized agencies in the city for the year 1935. iv + 70 pp. (Apply to the Civic Research Institute, Kansas City, Mo.)

Business Administration of Schools

Survey Manual for the Business Administration in Public School Systems.—By N. L. Englehardt and Fred Engelhardt, Bureau of Publications, Teachers College, Columbia University, 1936. 172 *pp.* $1.90.

This survey manual, developed by Prof. N. L. Engelhardt of Teachers College, Columbia University, and Prof. Fred Engelhardt of the University of Minnesota, presents a method for securing improvement in business practices in local school systems. The authors have divided the material of school business administration into seventeen different parts: Control and Organization; Personnel; Income Management; Budgetary Procedure; Financial Accounting; Payment for Service; Protection of Property and Personnel; Administration of Supplies and Equipment; Property Accounting; The Building Program; Management of Long-Time Obligations; Maintenance and Operation; Safeguards for School Funds; Cafeteria Management; Transportation; Research; and Office Management. Research and expert judgment have been used as the basis for setting up standards in these seventeen subdivisions, and a method of rating has been devised by which local conditions and practices may be compared with the standards. A total rating is thus made possible for the entire program of school business administration.

The Survey Manual was designed for the use of surveyors or local school officials in the analysis of practices. It is arranged for the recording of data and for contrasting the data with various levels of standards in the fields covered.

School business officials and school board members seeking improvement in practices will welcome this clear-cut and highly concentrated arrangement of materials. A bibliography, instructions in the use of the Manual, and a 1,000-point score card for rating, are among the features of this 172-page document.

Housing

The "Housing Index-Digest," which appears semi-monthly under the auspices of the Central Housing Committee, has issued a special number for December 15/31, 1936. The first lengthy section is a selected bibliography of opinion and comment on housing and slum clearance in the United States from 1834 to 1937. The articles listed are old and new, some very new, just published. The second section of this publication deals with Federal legislation on low-cost housing and slum clearance from 1892 to 1936. A third section presents a chronological list of the subject matter in parts I and II, and part IV is a subject index. 183 pp. (Apply to Adelaide R. Hasse, Room 611, 1734 New York Ave., Washington, D. C.)

Traffic

The Street Traffic Division of the City Engineer's Department of Minneapolis, Minn., with the help of Federal Works Progress, Emergency Relief, and Civil Works Associations, has issued a "Report on Street Traffic Survey, Minneapolis, Minnesota, 1934-1935." Its purpose is to assemble data which would make possible recommendations for a comprehensive plan of traffic facilities, regulation and control. The report is presented in three parts: I, a brief statement of the traffic plan in outline; II, a detailed description of the recommendations with supporting data and the experience of other cities; and III, an assembly of traffic studies, tabulations and graphs. The plan is intended to be practicable within available powers for action and possible financial resources. Recommendations include a few street improvements requiring some property acquisition, a substantial number of curb setback widenings, standardization of control equipment, accident prevention, and suggestions for the cooperation of all concerned in the traffic problem. *x* + 171 *pp.* (Apply to the City Engineer's Department, Traffic Division, Minneapolis, Minn.)

Celebrations

This year marks the 100th anniversary of the signing of the act which created the Territory of Wisconsin. Accordingly there was a centennial celebration in Madison, the proceedings of which are outlined in a "Souvenir Program." This program has an article on Wisconsin's history and several articles dealing with the special features and lines of progress of that state. 40 pp. 25c. (Apply to Wisconsin Centennial, Inc., 118 South Pinckney St., Madison, Wis.)

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For Beach and Swimming Pool Equipment, write for Catalog 28W

THE EVERWEAR MANUFACTURING CO.

The World's oldest and largest exclusive makers of playground, beach and pool apparatus.

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GRAVELY SNOW

Makes an All-Year GRAVELY

Quickly converts your Mower into a capable Sidewalk Snow Plow, for paths 40-54 inches wide. Goes places where the BIG Plow would get stuck!

SIDEWALK PLOW

Machine Out of Your MOWER

A mower in summer, a sidewalk snow plow in winter — TWO effective machines at only slightly more than the price of ONE! Prices and specifications on request.

Gravely Motor Plow & Cultivator Co., Dunbar, W. Va.

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"CITY BEAUTIFUL"

Trees — Shrubs — Evergreens

We grow them all, and ship direct.

Some new plantings selected from our large stocks will make your parks and public grounds more beautiful than ever before.

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McMINNVILLE, TENNESSEE

We grow a complete assortment of Northern-grown specimen Trees—Shrubs—Evergreens and other ornamentals for Park, Streets, and Municipal plantings.

Consultations and inquiries invited

PONTIAC NURSERIES

ROMEO, MICHIGAN

Housing

The Family Society of Philadelphia has issued a report on a special study of the housing conditions of 140 families, entitled, "Houses and the People Who Live in Them." The study was conducted with the aid of a detailed questionnaire which is reproduced in the appendix of the report. Twenty families were chosen for study from each of the following varieties of shelter: (1) the rooming house where some essential (like kitchen or bath) was shared with other tenants; (2) the apartment where all facilities needed by the family were in their rooms; (3) the small rented house with less than five rooms; (4) the large rented house with five rooms or more; (5) the house owned or being purchased. In addition, twenty families having serious health problems and twenty families with recent juvenile delinquency were chosen. The factual data are carefully weighed, and conclusions are drawn as to what actually is the harm of various bad housing conditions. 38 pp. 25c. (Apply to the Family Welfare Association of America, 130 E. 22d St., New York.)

Rural Zoning

Land-Use Planning Publications Nos. 10 and 11 of the Resettlement Administration are devoted to the subject of rural zoning. The first bulletin presents a general discussion of the methods of zoning and of some of the problems encountered in the drafting of zoning enabling legislation, and in addition it offers an illustrative draft of a rural zoning enabling act with some concrete examples. The second study makes the best possible case for constitutionality of rural zoning and hopes to be the inspiration for a persuasive lawyer's brief. So far, rural zoning has had no test in the courts, but this publication indicates the importance of marshaling all the judicial precedents possible to assist the usual slow transformation of what is a long-run necessity, intrinsically reasonable, into what is constitutionally reasonable. Publication 10 is entitled "Problems and Suggestions in the Drafting of Rural Zoning Enabling Legislation," and Publication 11 is entitled "Some Considerations in Support of the Constitutionality of Rural Zoning as a Police Power Measure." 67 and 48 pp. respectively. (Apply to Resettlement Administration, Washington, D. C.)

Other Reports Received

DETROIT, MICH.—"Comparative Tax Rates of 259 Cities, 1936" Detroit Bureau of Governmental Research, Inc. 15 pp.

LOS ANGELES, CALIF.—Annual Report of the Board of Public Works, July 1, 1935, to June 30, 1936. 145 pp.

NEW HAVEN, CONN.—"Three Years of Health Progress in New Haven, 1933-1934-1935." 31 pp.

NEW YORK, N. Y.—"The Failure of Housing Regulation," New York City Housing Authority. 19 pp.

TRENTON, N. J.—"The Cost of Government in New Jersey," New Jersey State Planning Board. 42 pp.

ST. JOHNSBURY, VT.—"Financial Exhibit and Report of Progress," year ending November, 1936. 45 pp.

Conventions -- When and Where

(Figures in parentheses following the name of the convention city indicate the estimated attendance other than local)

FEBRUARY 15.—SAN ANTONIO, TEXAS.
Associated General Contractors of America, Inc. Annual convention. Managing Director, E. J. Harding, 222 Munsey Building, Washington, D. C.

FEBRUARY 15-20.—COLLEGE STATION, TEXAS.
Texas Water Works Short School. Annual session. Address: V. M. Ehlers, Secretary, Southwest Water Works Association—Texas Section, Austin, Texas.

FEBRUARY 16-18.—ANN ARBOR, MICH. (500)
Conference on Highway Engineering—University of Michigan. Annual convention. Secretary, R. E. Morrison, University of Michigan, Ann Arbor, Mich.

FEBRUARY 23-26.—NEW YORK. (500)
American Concrete Institute. Annual convention. (Roosevelt Hotel.) Secretary, Harvey Whipple, 407-408 New Center Building, Detroit, Mich.

FEBRUARY 24-26.—NEW YORK. (1,000)
Association of Highway Officials of North Atlantic States. Annual convention. (Hotel Pennsylvania.) Secretary-Treasurer, A. Lee Grover, State Highway Commission, Trenton, N. J.

MARCH 11-12.—TRENTON, N. J. (200)
New Jersey Sewage Works Association. Annual meeting. (Stacy-Trent Hotel.) Secretary, John R. Downes, Bound Brook, N. J.

MARCH 17-19.—ATLANTIC CITY, N. J.
New Jersey Mosquito Extermination Association. Annual meeting. (Hotel Chalfonte-Haddon Hall.) Secretary, Thomas J. Headlee, State Experiment Station, New Brunswick, N. J.

MARCH 21-23.—HOUSTON, TEXAS. (200)
Southern Commercial Secretaries' Association. Annual meeting. Secretary-Treasurer, Stanley Draper, Chamber of Commerce, Oklahoma City, Okla.

MARCH 25-26.—INDIANAPOLIS, IND.
American Water Works Association—Indiana Section. Annual meeting. (Antlers Hotel.) Secretary-Treasurer, J. A. Bruhn, Indianapolis Water Company, Box 855, Indianapolis, Ind.

MARCH 30-APRIL 1.—OCALA, FLA.
American Water Works Association—Florida Section. Annual meeting. (Camp Roosevelt.) Secretary, J. R. Hoy, 404 Hildebrandt Building, Jacksonville, Fla.

APRIL 5-7.—CHATTANOOGA, TENN.
Joint meeting. (Patten Hotel.) *American Water Works Association—Southeastern Section.* Secretary-Treasurer, W. H. Weir, 135 State Capitol Building, Atlanta, Ga. *American Water Works Association—Kentucky-Tennessee Section,* Executive Secretary, Howard D. Schmidt, 420 Sixth Avenue North, Nashville, Tenn.

APRIL 5-6.—BOSTON, MASS. (1,500)
Massachusetts Safety Conference. Annual convention. (Hotel Statler.) General Manager, Lewis E. MacBrayne, 80 Federal Street, Boston, Mass.

APRIL 8-10.—BOISE, IDAHO. (300)
Pacific Northwest Regional Planning Commission. Conference. Chairman, Marshall N. Dana, 220 Federal Court House, Portland, Ore.

APRIL 14-16.—MONTREAL, QUE.
American Water Works Association—Canadian Section. Annual meeting. (Windsor Hotel.) Secretary-Treasurer, DR. A. E. BERRY, Ontario Department of Health, Parliament Buildings, Toronto, 5, Ont.

APRIL 19-22.—LEWISTOWN, MONT.
American Water Works Association—Montana Section. Annual meeting. (Burke Hotel.) Secretary, Herbert B. Foote, State Board of Health, Helena, Mont.

APRIL 22-23.—PHILADELPHIA, PA.
Joint meeting. American Water Works Association—Four States Section. Secretary, Carl A. Hechmer, Department Engineer, Washington Suburban Sanitary District, Hyattsville, Md. *Pennsylvania Water Works Operators' Association.* Secretary-Treasurer, I. M. Glace, 22 South 22d Street, Harrisburg, Pa.

APRIL 26-29.—WASHINGTON, D. C. (2,000)
Chamber of Commerce of the United States of America. Annual meeting. Secretary, D. A. Skinner, 1615 H Street N. W., Washington, D. C.

APRIL 29-30.—SPRINGFIELD, ILL.
American Water Works Association—Illinois Section. Annual convention. (Abraham Lincoln Hotel.) Secretary-Treasurer, W. D. Gerber, Engineer, State Water Survey, Urbana, Ill.

MAY 6-7.—WILMINGTON, DEL.
Maryland-Delaware Water and Sewerage Association. Annual conference. Secretary, A. W. Blohm, 2411 North Charles Street, Baltimore, Md.

MAY 10-14.—CHICAGO, ILL. (500)
National Fire Protection Association. Annual convention. (Congress Hotel.) Managing Director, Franklin H. Wentworth, 60 Batterymarch Street, Boston, Mass.

MAY 20-22.—VICTORIA, B. C. (150)
American Water Works Association—Pacific Northwest Section. Annual meeting. (Empress Hotel.) Secretary, Fred Merryfield, Oregon State College, Corvallis, Ore.

MAY 23-29.—INDIANAPOLIS, IND. (5,000)
National Conference of Social Work. Annual conference. General Secretary, Howard R. Knight, 82 North High Street, Columbus, Ohio.

MAY 24-27.—PITTSBURGH, PA. (1,500)
National Association of Purchasing Agents. Annual convention. (William Penn Hotel.) Secretary-Treasurer, G. A. Renard, 11 Park Place, New York.

MAY 31-JUNE 4.—CLEVELAND, OHIO. (200)
Building Officials Conference. Annual convention. (Hotel Statler.) Secretary-Treasurer, William F. Hurd, Commissioner of Buildings, Indianapolis, Ind.

JUNE 7-11.—BUFFALO, N. Y.
American Water Works Association. Annual convention. (Statler Hotel.) Secretary, Harry E. Jordan, 29 West 39th Street, New York.

JUNE 14-18.—LOS ANGELES, CALIF.
Institute of Government. Ninth annual session. (University of Southern California.) Executive Secretary, Prof. W. Ballentine Henley, School of Government, 3551 University Avenue, Los Angeles, Calif.

JUNE 21-25.—MILWAUKEE, WIS.
American Institute of Electrical Engineers. Annual summer convention. National Secretary, H. H. Henline, 33 West 39th Street, New York.

JUNE 21-26.—NEW YORK.
American Library Association. Annual conference. (Waldorf-Astoria Hotel.) Secretary, Carl H. Milam, 520 North Michigan Avenue, Chicago, Ill.

JULY 5-13 (APPROXIMATE).—PARIS, FRANCE.
Housing and Town Planning Congress. International Federation for Housing and Town Planning. General Secretary, Donald C. L. Murray, 25 Bedford Row, London, W. C. 1, England. *International Housing Association.* General Secretary Prof. Franz Schuster, Hansa-Allee 27, Frankfort a/M, Germany.

AUGUST 18-20.—DEARBORN, MICH.
American Water Works Association—Central States Section. Annual meeting. (Dearborn Inn.) Secretary, H. L. Nelson, 2435 Koppers Building, Pittsburgh, Pa.

AUGUST 30-SEPTEMBER 1.—ATLANTIC CITY, N. J. (76)
National Identification Association. Annual convention. (Hotel Madison.) Secretary-Treasurer, E. W. Livingston, Jamesville, N. Y.

OCTOBER 5-8.—NEW YORK.
American Public Health Association. Annual meeting. Executive Secretary, Dr. Reginald M. Atwater, 50 West 50th Street, New York.

OCTOBER 11-14.—AUSTIN, TEXAS.
American Water Works Association—Southwest Section. Annual convention. Secretary-Treasurer, Lewis A. Quigley, 3320 West Berry Street, Fort Worth, Texas.

OCTOBER 18-21.—NEW ORLEANS, LA.
International City Managers' Association, Annual convention. Executive Director, Clarence E. Ridley, 850 East 58th Street, Chicago, Ill.

OCTOBER 20-23.—SACRAMENTO, CALIF.
American Water Works Association—California Section. Annual convention. Secretary-Treasurer, Carl M. Haskinson, Chief Engineer, Division of Water, Sacramento, Calif.

NOVEMBER 4-6.—OMAHA, NEBR.
American Water Works Association—Missouri Valley Section—Annual meeting. Secretary, Earl L. Waterman, University of Iowa, Iowa City, Iowa.

Protect Your Shade Trees with a BEAN Park Sprayer

It takes **pressure** and **capacity** in a spray outfit to reach the tops of the tallest trees and to move rapidly from tree to tree, thoroughly drenching each one as you go. And it takes downright ruggedness of construction to deliver 20, 35, 55 or 60 gallons a minute at 600, 700, or 800 pounds pressure. That's what you get in BEAN Park and Shade Tree Sprayers. WRITE FOR CATALOG AND FULL INFORMATION.

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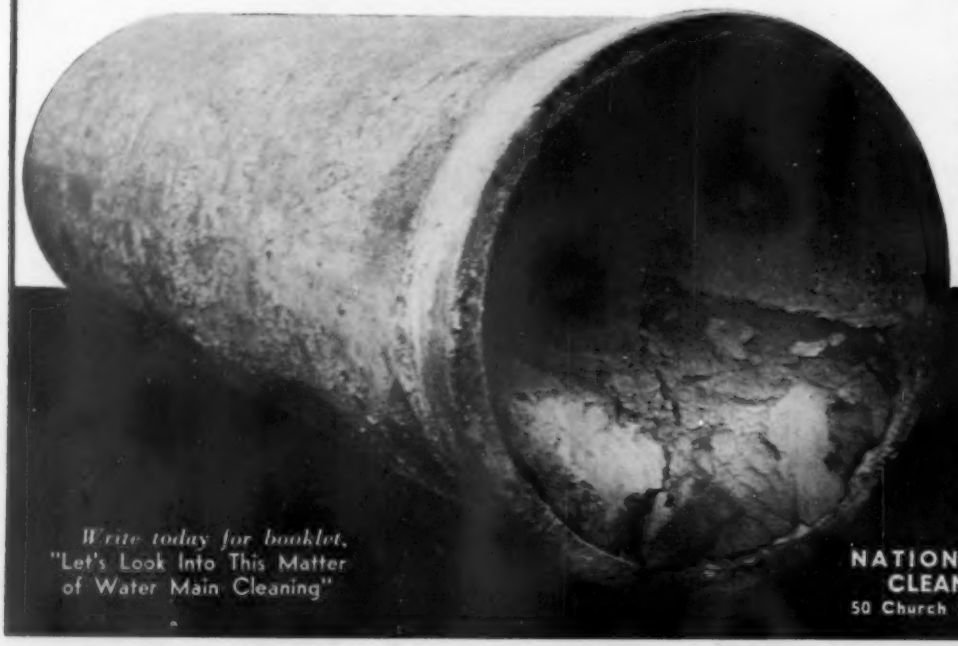
A PICTURE TO BEHOLD!

WOULD *YOU* KNOWINGLY DRINK FROM A MAIN LIKE THIS?



Perhaps the water from this main has no unpleasant taste or odor.

Perhaps the water is still healthful to drink! But a main clogged like this is a real menace in one respect: —The slow flow of water through the main means *reduced pressure* at hydrants and faucets. A point is reached where there is insufficient pressure for fire-fighting. To *increase* the pressure to the safety point means *greatly increased expense* for power at the pumps, or scrapping the old main and buying a new one—OR—

A more economical remedy by far is to have the main cleaned by THE NATIONAL METHOD.

Write today for booklet, "Let's Look Into This Matter of Water Main Cleaning"

NATIONAL WATER MAIN CLEANING COMPANY
50 Church St. New York

News and Illustrations

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

Autocar Appointments

The Autocar Company, Ardmore, Pa., has announced the appointment of Adolf Gelpke as Chief Engineer, and the appointment of Edward F. Coogan as Sales Manager of its motor-truck factory. Mr. Coogan was formerly Assistant Sales Manager under H. M. Coale, who is Vice-President in Charge of Sales, and Mr. Gelpke was Assistant Engineer under B. B. Bachman, who is Vice-President of Engineering.

Batch and Stepleton Join H. P. Jones & Co.

Harvey P. Jones, of H. P. Jones & Co., engineers, 2012 Toledo Trust Building, Toledo, Ohio, has announced that Richard M. Batch and Harold A. Stepleton, who have been associated with him, have been admitted to membership in the firm of H. P. Jones & Co., engaged in consulting practice in the sanitary engineering field.

Ferry Boats with Diesel Power

Busch-Sulzer Bros.-Diesel Engine Co., St. Louis, Mo., furnished the 3,000-hp 10-cylinder diesel engine and a 600-hp 8-cylinder auxiliary for the ferry boat Kalakala, the world's first completely streamlined vessel. This ship was commissioned July 2, 1935, as the result of the experience with a 2,130-hp 8-cylinder Busch-Sulzer 2-cycle trunk piston diesel main engine and a 375-hp 5-cylinder 4-cycle Busch-Sulzer auxiliary engine used in the Chippewa, which was commissioned as a diesel ferry in May, 1932, after having completed 30 years of service on the Great Lakes and Puget Sound as a 1,500-hp steam vessel, using from 120 to 135 barrels of fuel oil per day on comparable mileage at a speed of 13½ knots. The diesel equipment increased the speed to 16 knots and showed a drop in fuel consumption to an average of 51 barrels per day at eight round trips per day, or 248 miles.

THE NEW LITTLEFORD HEATER AND TOOL-BOX

Asphalt Supply Tank and Tool-Box Combined

The success of a new supply tank built by Littleford Brothers, 500 East Pearl Street, Cincinnati, Ohio, for the city of Cincinnati for a gang doing sheet-asphalt repairing has led to the addition of this tank to the Littleford line. It will heat 550 gallons of asphalt from a cold start in 90 to 100 minutes and, once fully heated, the burner can be turned off and the hot material drawn off all day long without further heating.

The combined tank and tool-box holds all the paving tools needed by the gang as well as over 500 gallons of material, so that no service truck is required to haul tools and kettle. The unit saves space in congested areas, eliminates several pieces of equipment and, since every part of the unit can be put under lock and key, no night watchman is needed.

The actual capacity of the elliptical tank is 580 gallons. The overall length of the body exclusive of the pulling bar is 13 feet 11 inches, and the approximate weight when the tank is empty is 6,500 pounds. The heating unit is composed of two No. 5 LB torch burners, a 20-gallon A.S.M.E. fuel tank and two 6-inch diameter return U type heat flues. The tank is insulated all over with 1 inch of Rockwool. Semi-elliptical springs swing the body on the axles, which are carried by wheels with solid rubber tires. Timken-Westinghouse brakes are used on the rear wheels only. The tool-box has 72 cubic feet of storage space. The tank has 2½-inch draw-off. A pulling hook for trailers is built into the rear end of the unit.

New Street Sweeper Aids City Cleanliness

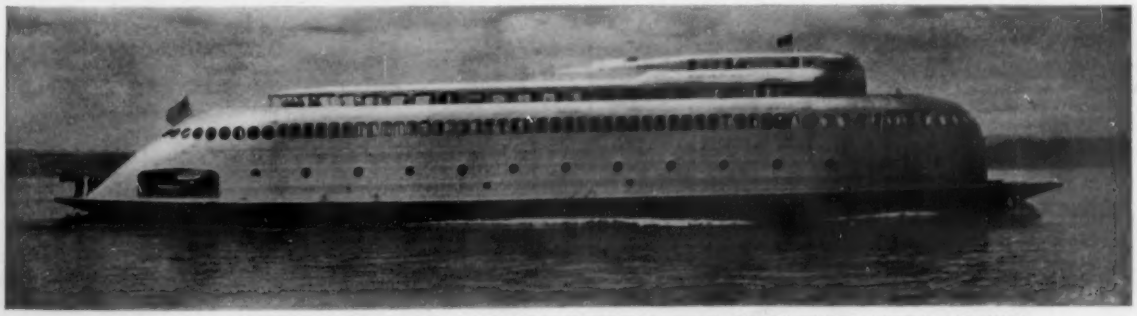
The Frank G. Hough Co., Chicago, Ill., has added a new road sweeper to its products as an answer to the street-sweeping problem of the smaller cities and towns. The Universal Sprinkler-Sweeper can easily be pulled by a small tractor or truck, as the brush takes its power from a 4-cylinder engine mounted on the sweeper. This machine sweeps either to the right or the left without raising dust, as water is sprayed under pressure on the road surface just ahead of the brush.

Designed Economy in Water Supply

The advantages, and particularly the economies, of Armco spiral welded pipe for municipal water supplies are discussed in detail, with comparative figures and illustrations, in Bulletin No. 136, which is being offered to water-works superintendents, consulting and city engineers, and public officials, by the Pipe Sales Division of The American Rolling Mill Co., Middletown, Ohio.

This 60-page spiral-bound booklet, with a special cover, contains photographs of actual installations of Armco spiral welded pipe for water-works uses, technical data showing the relation between wall thickness and working pressures, and information on couplings, joints and flanges, and describes various protective coatings used for pipe that goes into underground service.

Tabular data compiled by a committee investigating pipe line friction coefficients is also contained in the booklet. Their general conclusions originally were printed in the *Journal of the New England Water Works Association.*



THE STREAMLINED DIESEL FERRY KALAKALA, EQUIPPED WITH BUSCH-SULZER DIESEL ENGINES

MUD-JACK METHOD
for raising concrete curb · gutter · walks · street

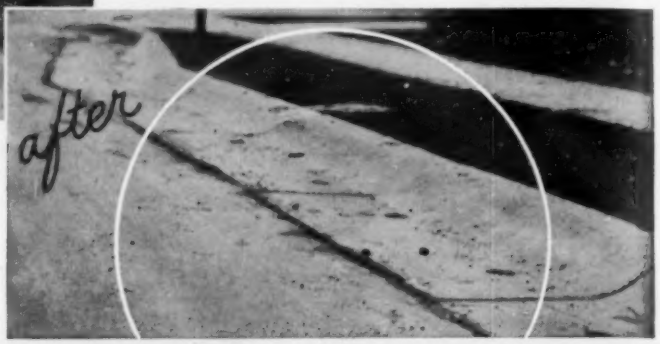
Sunken Curb and Gutter Marked for Reconstruction

but

THE MUD-JACK METHOD *corrected the settlement and saved the reconstruction costs*

Save CURB — GUTTER WALKS — STREETS

The Mud-Jack method saves the slab —corrects the subgrade—eliminates pedestrian hazards. Write for data to reduce maintenance expense.



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Pavers · Mixers · Shovels · Cranes
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A Popular Swim Pool

contains water that is actually "pure enough to drink" —water that is crystal-clear and kept in circulation by continuous passing through a purifying unit. Graver Units have given dependable service for many years in some of the country's outstanding pools. They are easy and economical to operate, long lived.

If you are planning a pool, get the informative Graver book on Design, Construction and Operation of Modern Pools, sent free on request.

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TRUEHEDGE COLUMNBERRY

Berberis thunbergi pluriflora erecta

The Most Sensational Plant Introduction in More Than a Decade

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New Truehdge Columnberry-Common Barberry

COMPARE THESE 2-YEAR OLD PLANTS

Truehedge Columnberry is an upright type of barberry. Trimming is almost eliminated, saving much labor. Write for full details. Free Booklet.

HENRY C. MUSKOPF, Landscape architect says: "For an effective narrow, naturally upright growing plant, we know of none to equal its distinctiveness."

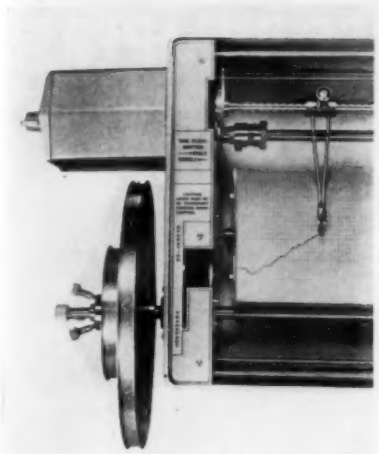
ROMAINE B. WARE, nationally-known Horticultural Editor and Writer says: "I have visited in a dozen states since the first of June and everybody seems to have a good word for Columnberry."

PAUL A. WELLS, Syracuse City Forester says: "It would appear that you have developed a very fine plant from the standpoint of appearance, good foliage and color, and low maintenance cost, and we will not hesitate to use more as the need rises."

L. E. JERMY, Chairman, Cleveland Section, A. S. M. E. says: "Trimming is entirely unnecessary, and it seems as though the characteristic of these columnberries in throwing shoots upright rather than sideways will render only very infrequent, if any, clipping desirable.

THE COLE NURSERY CO. *(Est. 1881)*
PAINESVILLE, OHIO

Wholesale catalog on request.
"Everything That's Good and Hardy"



FLOAT WHEEL, TIME SCALE SHIFTER AND RECORDING PEN OF A FRIEZ WATER-WHEEL RECORDER

A Minute-by-Minute Water-Level Record

A continuous graphic record of the water level in any reservoir or tank is a valuable possession of any Water Department. It serves an infinite number of purposes in economical water-works operation, and even in those unfortunate times when a department may be a defendant at law. The Model FD water-level recorder made by Julien P. Friez & Sons, Inc., Baltimore, Md., may be used with a daily or a weekly time scale. In the daily, or 27-hour, scale, the traverse of the pen is at the rate of 0.4-inch per hour. In the weekly period, 9 days, the pen-traverse is at the rate of 0.05-inch per hour. The 27 hours for nominal daily periods and the 9 days for nominal weekly periods gives a convenient time over-run advantageous to the operator whose duty it is to visit the gage and collect the records.

The horizontal chart drum for this recorder is float-driven by a perforated tape through a spined wheel. Several height scales are possible with very minor and easy field adjustments. Time is measured by the traverse of the pen along the drum, the rate of travel being governed by a clock escapement. The clock-gears are located separately from the escapement, and by a shift from one train to another either a daily or weekly record is secured. The charts are unmarked for either the hours of the day or the days of the week, and thus the starting time of the record may be always the base line of the chart, and a full period of record is provided no matter at what time of day or on what day of the week the record is started.

Since the chart drum is driven almost directly by the float-wheel with a minimum of intervening parts, lost motion is reduced greatly and accuracy assured, even when floats of 3-inch diameter are employed. The chart is attached to the drum in a novel manner. Within the chart drum is a locking and unlocking device which draws, and at the same time grips, both ends of the chart when they are inserted within the slot. Thus the chart is held closely wrapped throughout its whole length, and the diameter of the drum is never varied.

This model is especially adapted also for recording stage at stream gaging stations where low flow is nearly constant and where high flows are flashy.

Miniature Glass Balls Form Traffic Stripe

A truly new idea in traffic stripes has been developed by Fred H. Korff, Inc., 450 Seventh Avenue, New York. This Refract-o-lite zone-marking system uses both the refraction and the reflection of light to increase the luminosity of zone markings by day and by night. It consists of a binder-paint placed on the roadway, into which are rolled myriads of tiny glass balls which furnish the luminous element. The binder-paint will withstand the effects of street acids, gasoline, oil, salt water and any water and other liquids usually found on roadways. It can be applied to concrete, asphalt, macadam or brick and is furnished in any color to contrast in color with the paving surface.

Owing to its peculiar pebbly surface, because of the glass balls, a firmer grip for automobile tires is provided, thus helping to prevent skidding. The fact that the striped material is 20 times as brilliant at night as other traffic paints, according to a test of the New York Testing Laboratories, makes it particularly valuable for use on dead-end streets and for dark intersections and sharp curves.

A Microphone-Type Water Leak Detector

The Water Leak Detector Co., 155 North Third Street, Columbus, Ohio, has developed for water-works superintendents a new "Universal" water leak detector to aid them in reducing the volume of unaccounted-for water. This device practically removes the human element in detecting leaks on mains, hydrants, valves and domestic services.

The Universal water leak detector was developed by F. Ferguson, a consulting hydraulics engineer, of Columbus, Ohio. It operates on the latest principle of measured sound, which records the extent of the leak vibrations on a meter, and the amplitude is determined on a dial. It consists of a microphone which can be attached to brass sounding rods or hung from shut-off keys to secure registrations on curb services. The instrument proper is housed in a case of sturdy steel with a specially designed lid to give complete protection against the elements to both the meter and the knobs on the instrument panel. Twenty-five feet of extra-heavy rubber-covered cable leads from the batteries or power pack to the instrument itself. The RCA microphone contains a genuine 1¼-inch square Rochelle crystal. The microphone itself is housed in an aluminum and bakelite case and includes as part of its equipment a standard length of 7½ feet of shielded rubber-covered cable and a metal plug-in. Earphones are not needed with this instrument, but are provided for delicate work, as proper tuning of the instrument greatly amplifies the sound of the leak. By moving the microphone or instrument either forward or backward over a point where a leak is indicated, the meter reading will increase or decrease, showing that the operator is going towards or away from the leak. This instrument has a leak tone selector. Since no two leaks give off the same sound, these leak sounds are sent through the meter and measured.

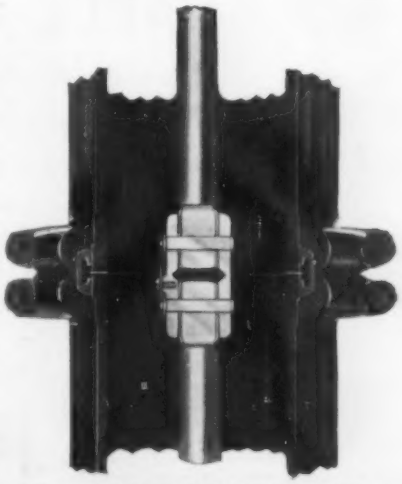
Attachments for locating buried pipe are part of the regular attachments.

The Universal is able to spot a leak many feet away. Leak indications for large breaks can be spotted up to 500 feet from the point of microphone contact, while smaller leaks are spotted at a distance of only a few feet.

Safe Fire Hydrants with Special Tops

Smith fire hydrants, made by the A. P. Smith Manufacturing Co., East Orange, N. J., have special protection which permits repairs incident to collision breakage to be made in less than 15 minutes at little cost. The Protectop standpipe is joined to the hydrant barrel by a frangible clamp which encloses a rubber gasket designed to eliminate all possibilities of leakage. The hydrant stem is made in three sections, the central section being of cast iron amply strong to resist the strain of opening and closing, but having a frangible point in line with the frangible point of the clamp.

After collision, the only parts needing replacement are the frangible standpipe clamp and the frangible cast iron stem section, the combined cost of both being approximately $5. The hydrant valve, being of the compression type and guided throughout its travel, will remain closed, and even if it is open at the time of collision, it will close instantly, thus eliminating all danger of flooding nearby excavation and basements.



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HEIL Quality PRODUCTS

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Sanitation officials in large metropolitan centers as well as in smaller cities and towns, have proved to their own satisfaction that dependable Heil dump units speed up garbage collection service and cut down operating costs—By all means discuss your requirements with a Heil representative and get the benefit of Heil's acknowledged leadership in the field—Remember this—no matter how complicated your problem, The Heil Co. is prepared to design and fabricate equipment exactly suited to your needs—Write, wire or phone your inquiries today—Address:

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For supervisory control, fire-alarm, police-signal, telephone, and other control circuits . . . for voltages up to 220 a-c or 450 d-c

This cable has the new G-E thin-wall insulation that saves duct space and maintenance.

See, from the box, how high is the dielectric and tensile strength of Thinwol—which means a smaller-diameter cable and a saving in duct space—also thinner lead sheath and thus lower cost.

Long life, too, is another good reason why you will want to specify Thinwol for your next multiconductor control circuits. We shall be glad to give you more detailed information. Address nearest G-E sales office, or General Electric, Dept. 6A-201, Schenectady, N. Y.

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Dielectric Strength In Volts per Mil
Dry Samples 833
Wet Samples 243
(7 days soak at 70 C)

Water Absorption In Gram per Sq In.
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Tensile Strength In Lb per Sq In.
Original 2005
After 96 hr in oxygen bomb at 75 C 1712

*Actual results from normal factory-run samples—NOT guarantee.

OFF TO A GOOD START

With a COLDWELL Power Mower!

The wise owner or caretaker makes certain early in the year that his lawn will be smooth and luxuriant throughout the season. COLDWELL Super Twin Power Mowers are famous for their ability to mow large expanses of lawn quickly and economically. Equally important is their contribution to the early development of the lawn. Pneumatic-tired wheels glide smoothly over the lawn and the broad rubber roller smooths out the soft Spring turf. There is a COLDWELL model for every size lawn and purpose. FREE literature gives complete information.

COLDWELL LAWN MOWER CO.
Dept. C, Newburgh, N. Y.

GET A BETTER JOB AT LESS COST

With Hotstuf

WRITE US FOR BULLETINS

MAINTENANCE EQUIPMENT
ASPHALT HEATERS
TOOL & SURFACE HEATERS
WEED BURNERS
TRAILER TOOL BOXES FOR SERVICE DEPARTMENTS

MOHAWK ASPHALT HEATER CO.
Frankfort New York

Dresser Promotions Announced

S. R. Dresser Manufacturing Co., Bradford, Pa., manufacturer of flexible pipe couplings and pipe-line repair devices, has announced the elevation of M. N. Davis from Vice-President in Charge of Sales to Executive Vice-President. Mr. Davis also continues as Secretary of the company.

H. P. Boncher, formerly Assistant Sales Manager, is now Sales Manager. R. E. Reimer has been made Assistant General Manager in addition to his duties as Treasurer. H. N. Mallon continues as President and General Manager, and F. A. Miller is Chairman of the Board.

Rochester Adds to Collection Equipment

John V. Lewis, Director of Maintenance and Operations for the city of Rochester, N. Y., recently visited the Detroit plants of Gar Wood Industries, Inc., to supervise the city's purchase of new Gar Wood hydraulic hoist and body equipment for twelve special rubbish and ash collection trucks to augment the ten units of this type already in service in Rochester. The order recently placed calls for four more trucks of 14-cubic-yard capacity and six of 8-cubic-yard capacity.

Some of the features of these units are low loading height, which is accomplished by the special design of the Gar Wood D-66 hydraulic hoist, removable sideboards, power-operating hydraulic tailgate which gives a clear opening to facilitate load-dumping, and bodies which are fully enclosed and have folding-back tarpaulin cover. After trying out several different types of rubbish and ash collection units, the city of Rochester has adopted this style of truck as being the most satisfactory from economic and service standpoints, according to Mr. Lewis. Rochester, in addition to the fleet of 20 rubbish and ash collection units, has 15 other types with Gar Wood hoists and bodies in service in other departments.

Chrysler Announces 1937 Dodge Trucks

Featuring still greater economy, numerous mechanical improvements and a brand new capacity model, the Chrysler Corporation, through its Dodge Division, has announced the 1937 series of Dodge trucks and commercial cars. The new line includes ½-ton; ¾-1-ton, an entirely new capacity model; and 1½-, 2-, 3- and 4-ton trucks. The mechanical advantages of the 1937 model include greater engine power, hydraulic brakes, fuel lines mounted on the outside of the frame, improved ventilation of the fuel pumps to reduce possibilities of vapor lock, an outside gasoline filler tube on cab models, longer rear springs and stronger safety steel cabs.

Special features on the ½-ton and the ¾-1-ton models are: new and more powerful truck engines; truck transmissions; rubber-insulated engine mountings on front and rear; vacuum spark advance; and high compression cylinder heads. Outstanding on the 1½- and 2-ton trucks is the improved chassis frame, which has X-type cross members at the rear of the frame and box-type cross members at the front.

The ¾-1-ton truck, the new addition to the line, is offered in the following standard body models: flat-faced cowl, cowl with windshield, panel, screen, canopy, cab and express. This new model was brought out for the purpose of permitting greater load capacity with approximately the same cost of operation as the smaller capacity units.

New St. Louis Plants for West Coast Company

Progressive additions have been made at the home plant of the Pomona Pump Co., in Pomona, Calif., during depression years but, to supplement adequate production, it has been necessary to establish a central location to provide faster deliveries to eastern states. A new plant for the manufacture of Pomona pumps has been completed at 4301-7 South Spring Avenue, St. Louis, Mo., making overnight deliveries possible to all points within a radius of 300 miles, and, in 48 hours or less, goods can be laid down anywhere east of the Rocky Mountains.

C. C. Cook, former Manager of Pomona's Chicago office, has been appointed St. Louis Manager. E. W. Bennison succeeds Mr. Cook as Manager of the Chicago office.

Sanitary Laboratory Opened by Riddick

Thomas M. Riddick, consulting chemist, formerly associated with the late Nicholas S. Hill, Jr., as chemist and bacteriologist, has recently established laboratories for the chemical and bacteriological analyses of water, sewage and milk, and for testing coal, sand and cement, at 369 East 149th Street, New York. He will also undertake the supervision of water and sewage-treatment plants and swimming pools, and will carry on stream pollution investigations and sanitary surveys.

Mr. Riddick was formerly instructor in sanitary engineering at New York University, and was with the North Carolina State Health Department and the North Carolina and Virginia State Highway Departments. He is a member of the American Water Works Association, the American Society of Civil Engineers, the New York State Sewage Works Association, and the American Public Health Association.

Caterpillar Announces Central Sales Division

Caterpillar Tractor Co. has announced the appointment of Louis B. Neumiller as Sales Manager of its Central Sales Division. Edward W. Jackson has been made General Service Manager, the position formerly held by Mr. Neumiller.

The Central Sales Division is a sales area created by the division of the United States into three sales areas instead of the former two. It includes roughly the territory lying between the Rocky Mountains and the Mississippi River.

H. M. Hale is Sales Manager of the Eastern Sales Division; H. H. Chambers of the Western Sales Division; and F. G. Nunnelly of Canada. All of these men make their headquarters in Peoria, except Mr. Chambers, whose headquarters are at San Leandro, Calif.

Air-Cooled Engine Production Increased

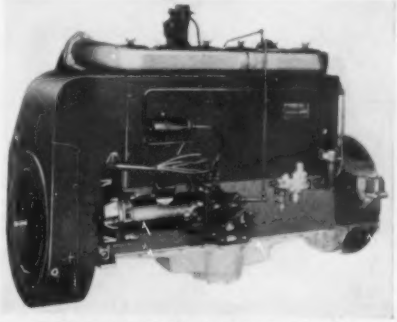
Doman-Marks Engine Co., Inc., Syracuse, N. Y., has launched expanded production of its air-cooled heavy-duty engines for motor trucks and industrial installations. This follows more than a year of development work after the foundation of the company in late 1933, and about a year of initial output that has extended to a variety of power applications. At the present time the engines are in use as replacements in heavy-duty motor trucks, in air compressors and in power units for snow-plows.

The current activities in Syracuse are providing for a complete tooling-up for manufacture in increased quantity within the Doman-Marks plant for parts formerly handled on contract with outside sources. The result of this move has quadrupled local employment in the plant.

Among the engineering projects now under way are the manufacture of three initial models of a new light-weight low-priced car for interests outside Syracuse which will involve the use of a 4-cylinder, opposed-type, air-cooled engine.

The success of the Doman-Marks engine as a replacement unit in truck fleets has been interesting. The economy of the installation is based on freedom from trouble through air-cooling, the elimination of anti-freeze expense, and a reduction in gasoline consumption showing a saving of as much as 1.34 cents per mile on gasoline and oil alone on a heavy hauling truck fleet.

E. S. Marks, Vice-President of the Doman-Marks Engine Co., was chief engineer of the Franklin car for many years, and Carl P. Doman, another Vice-President, as research engineer for approximately an equal time. Wallace Benedict is Sales Manager.



THE NEW DOMAN-MARKS HEAVY-DUTY AIR-COOLED ENGINE

Civic Safety . . . depends on Cables

1. Latox Insulated, Braided Conductors.
2. Rubber Faced Tape.
3. Lead Sheath.

In these modern days with accidents and emergencies arising with machine gun like rapidity it is imperative that your police and fire alarm systems be able to function faultlessly. They should be able to do every day routine work and still be ready for instant action at the first sign of trouble. It doesn't matter how great the emergency or how urgent the need if your signals are equipped with Simplex-LATOX Cables you can rest assured that they "will get the message through". A failure might add to confusion or disaster – your cables must carry you through.

If your conduits are already crowded then LATOX is your answer because LATOX Cables are smaller in diameter. You can run a greater number of conductors through the old conduit, which will enable you to spread your boxes and signals farther afield as you have wanted or to intensify the coverage in your present area.

Latox insulation has exceptionally long life and will retain those qualities which make rubber the best insulation yet devised for wires and cables. Simplex-LATOX Cables may be expected to stay in service as long as the apparatus or equipment for which they are installed.

Complete information, including illustrations, comparisons, tests and specifications may be obtained by sending for booklet "Simplex-LATOX Lead Covered Cables".

Appropriations go further if you save on:

Size and Weight – For equivalent service LATOX walls of insulation are thinner than ordinary rubber compound insulation resulting in a smaller cable and lower cost of protective coverings.

Handling – Lighter weight and smaller reels reduce freight, trucking and storage charges.

Installation – Less labor and installation equipment is required to safely and quickly install the smaller, lighter, Simplex-LATOX Cables.

Conduits – Simplex-LATOX Cables use a minimum of conduit space and increase the capacity of existing conduits.

Maintenance – When properly installed, Simplex-LATOX Cables should require little if any attention to maintain satisfactory service.

Replacement – Simplex-LATOX Cables may be expected to stay in service as long as the apparatus or equipment for which they are installed.

Simplex Wire & Cable Co., Sidney St., Cambridge A, Boston, Mass.

Simplex – LATOX

Thin wall insulation made directly from rubber latex

TYPE OF PLANE USED BY THE ABRAMS CORPORATION IN ITS AERIAL SURVEY WORK

Aerial Mapping Projects

Mapping projects now in progress by the Abrams Aerial Survey Corporation, Lansing, Mich., include: the mapping of the island of Puerto Rico in the West Indies for the Puerto Rican Reconstruction Administration; Firestone rubber plantations in Liberia, Africa, for the Firestone Tire and Rubber Co., Akron, Ohio; and large areas in North and South Dakota, Minnesota, and Wisconsin, for the Soil Conservation Service, U. S. Department of Agriculture.

This company, which maintains its main office and laboratories in Lansing, Mich., with branch offices in Detroit, Mich., Washington, D. C., and San Juan, Puerto Rico, recently completed the mapping of 4,000 square miles in Illinois for the County Soil Conservation Committee of the U. S. Department of Agriculture, maps being made of Grundy, Ford, Iroquois, Livingston and Vermilion Counties to check for crop compliance contracts of Illinois farmers.

One hundred and twenty-four cities in Michigan have been mapped by the Abrams Aerial Survey Corporation, these maps being used for city zoning and planning, tax assessing, and street-widening projects.

The company has recently placed on the market a new instrument, known as the Abrams Contour Finder, which has been in development over a period of several years. Not only does this instrument show the heights of trees, buildings, hills, etc., on photographic maps made from a height of several miles, but with it it is possible to actually measure these heights quite accurately. The instrument will open a new field for the use of aerial surveys on tax-assessing and tax-equalization projects. The Contour Finder more than doubles the value of aerial surveys in municipal work, and it is loaned by the Corporation to its customers.

A Speed Patrol Catalog

A new catalog containing information on the complete line of Allis-Chalmers speed patrols, with action pictures showing the machines working under many different operating conditions, has just been issued by Allis-Chalmers Manufacturing Co., Tractor Division, Milwaukee, Wis. The various features of the patrols are described and illustrated with photographs. Several pages are devoted to the tandem-drive models brought out early in 1936 with either four- or eight-wheel tandem assemblies and a choice of either gasoline, distillate or diesel fuel-burning engines.

Details of the controlled ignition diesel fuel engine are given. This type of engine has been used for several years in A-C tractors and has been well received by road machinery users.

New Device Locates Pipes Without Electrical Contact

A new instrument designed to quickly locate buried pipes, measure their depth, and permit the rapid and accurate mapping of underground metallic systems has been announced by the Fisher Research Laboratories Sales Co., Board of Trade Building, San Francisco, Calif., and 45 Rockefeller Plaza, New York.

This new instrument, the M-Scope, consists essentially of two specially designed radio units, a transmitter and a receiver. For most services two men are required, one for each unit. For others, both units are handled by a single operator. No electrical contact with the object being sought or traced is required except when tracing a single member of a compact group of pipes.

In using the assembled M-Scope to locate a buried pipe, the operator switches on the transmitter, puts on earphones connected with the receiver, and carries both units in the direction of the line, if this is known. As he approaches the line, the sound heard in the phones gradually increases, and a needle on an indicator meter swings forward, both signals reaching maximum when the operator crosses the line. This spot is marked, and the operator then continues onward along the same straight line until the signals become minimum. Then he retraces his steps until both signals are at a maximum again. The point halfway between this spot and the one previously marked lies directly over the center line of the buried pipe. One half of the distance between the two marked spots is the exact depth of the pipe.

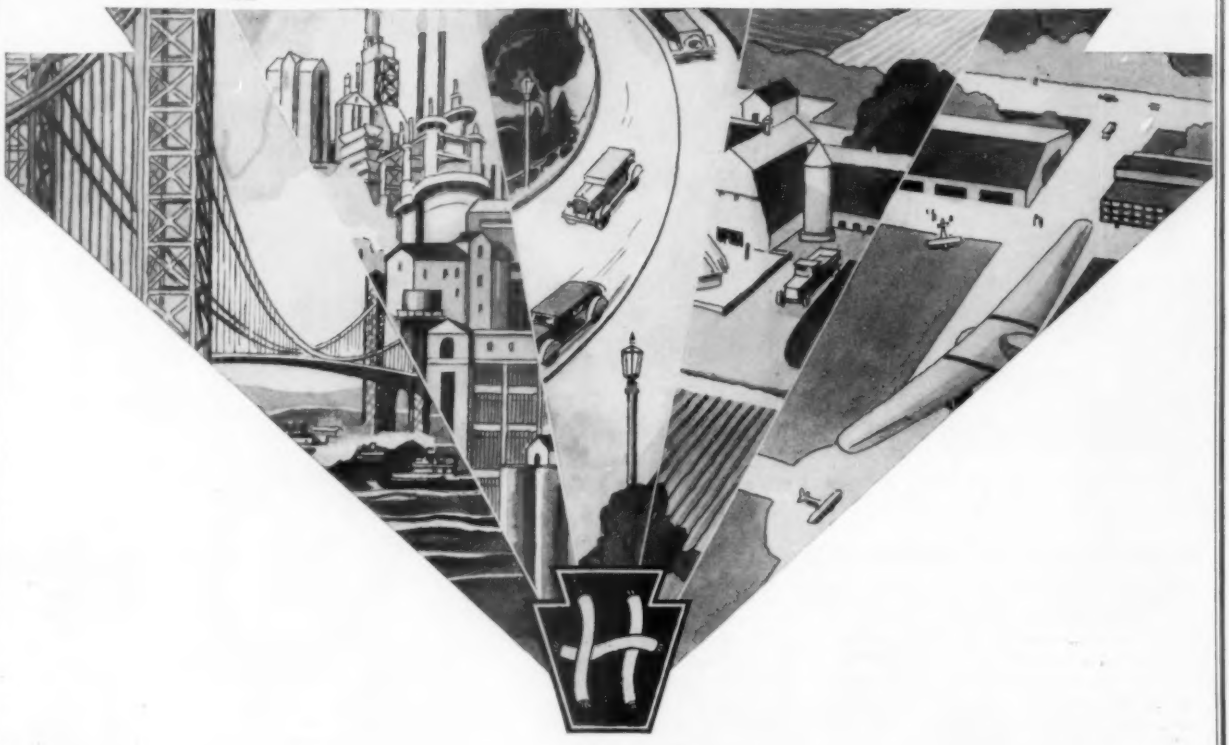
To trace a line of pipe, the transmitter is set on the ground directly above it, and the operator, carrying the receiver, follows the path along which sustained signals are received. Sudden increases in the signals mean additional metal, a valve, a junction, etc., just below. Sudden decreases mean that the line has turned aside or ended. Branches are located by placing the transmitter above the main line and carrying the receiver parallel to this line; or the receiver can be placed on the ground directly above the pipe and the transmitter can be carried at right angles but parallel to the pipe.

Areas containing unknown lines can be readily surveyed by two men, each carrying a unit. An ingenious device, actually a level, on the receiver makes it possible to measure the depth of a line by merely carrying the receiver along a path running at any angle as recorded by the level, to the buried line.

According to the Fisher Laboratories, practically all parts of the M-Scope are standard radio equipment and can be repaired or replaced by any competent radio man. Energy for both units is supplied by standard dry cells which last several months in normal service. Individual units weigh about 8 pounds each. The complete instrument in a carrying case weighs about 22 pounds.

ONE-MAN OPERATION OF THE M-SCOPE TO LOCATE HIDDEN PIPES

Underground without Conduit



HAZARD ARMORTITE CABLE

On its performance alone, Hazard Armortite Cable has been proven a *practical* cable for underground pole lighting in connection with boulevards, parks, airports, playgrounds, bridges, and private grounds. Another distinct use is for underground services to houses or for power runs between industrial buildings.

The specially developed submarine type of insulation used in Armortite Cable makes it effectively resistant to moisture. Its rugged, durable coverings protect it during installation and assure lasting service.

HAZARD INSULATED WIRE WORKS

Division of The Okonite Company
WORKS: WILKES-BARRE, PA.

Sales Offices:

New York Chicago Philadelphia Pittsburgh Buffalo Boston Detroit
Atlanta Seattle Dallas San Francisco Los Angeles Washington

THE JOY SNOW LOADER AT WORK

New Snow Loader Mounted on Heavy Truck Chassis

The new Type NY-36 snow loader made by the Joy Manufacturing Co., Franklin, Pa., is designed to load snow and ice into trucks at a rate of 10 to 20 cubic yards per minute, depending upon the character of the material to be handled. Its speed while loading varies from practically a standstill to 2½ miles per hour, and its maximum speed in moving from one location to another is more than 25 miles per hour.

The loading mechanism consists of a gathering head of teeth able to handle both loose and frozen snow synchronized with an elevating and discharging flight conveyor. By the use of a patented articulated section and a universal chain, the conveyor can be swung laterally to either side of the machine for discharge into trucks, either behind or traveling parallel to the loader.

The loading mechanism, which is driven at a governed speed according to the loading requirements, is powered by a standard direct-connected gasoline motor mounted on a standard automotive truck chassis which is powered in the conventional manner. Thus each separate functional unit is powered according to its requirements, eliminating the use of a power take-off.

The vertical adjustments of the gathering head and conveyor and the lateral movements of the discharge are accomplished through hydraulic controls from the heated cab of the operator. The cab is also equipped with shatter-proof glass, a windshield wiper, an upholstered driver's seat, an instrument panel fully equipped with the necessary meters, switches, and gages. The self-starters for both motors are controlled from the cab. An adjustable spotlight is trained on the discharge conveyor. The Joy snow loader is 35 feet 1 inch long, 8 feet 9 inches wide, and 10 feet 3 inches high, and weighs 20,000 pounds.

Lynchburg Foundry Co. Western Sales Mgr. Dies

John A. Sullivan, Western Sales Manager, Lynchburg Foundry Co., died suddenly on January 11 at his home in Wilmette, Ill. He had been connected with the Lynchburg Foundry Co., for the last twelve years and was well known and well liked throughout his territory. He is survived by his wife, three daughters and one son.

New Low-Price Trucks

Robert F. Black, President, The White Motor Co., Cleveland, Ohio, has announced his company's entrance into the low-price truck field with a new line priced at less than $1,000. Manufacture of the new truck models will push production schedules upward 50 per cent over last year, anticipating the sale of more than 20,000 units during 1937.

This low-priced White truck rated in the 1-1½-ton field will be manufactured in two models, 700 and 700K, the latter a tractor. The new series will make available a group of optional features such as wheelbases, transmissions, rear axles, ratios and tire sizes to meet the requirements of specific operations.

These trucks will be powered with a new White 6-cylinder engine of 250-cubic inches displacement with light-weight pistons. The wheelbases will range from 136 to 196 inches. The four-wheel hydraulic brakes have 270 square inches of lining area, and the cab is automatically ventilated.

Colonel Dennis on Wide Tour for Motor Safety

An extensive tour in the interest of highway safety is now being made by Col. Fred L. Dennis, Director of Safety, Bendix Products Corporation, South Bend, Ind. The tour started from South Bend on January 4, thence to Dallas, Austin, Houston, Ft. Worth and San Antonio, Texas. From Texas, Colonel Dennis will go to Denver to confer with safety officials, and then will hold similar conferences in New Mexico and on the Pacific coast.

Emergency Service with Chlor-O-Feeders

During the 1936 floods in New Hampshire, Proportioneers, Inc., 9 Codding Street, Providence, R. I., loaned Chlor-O-Feeders for the emergency sterilizing of water supplies. It has recently extended this assistance to any State Health Department in the Mid-West flood area.

At Epping, N. H., during the spring flood of 1936 a representative of the New Hampshire Board of Health took in an emergency Chlor-O-Feeder to the pump house of the water works via a breeches buoy. With a shipping dimension of 11 x 21 x 10 inches and a shipping weight of only 75 pounds it was quite easy to get the unit into place and quickly place it in service.

Attractive Poles for Traffic Signals

Crouse-Hinds Co., Syracuse, N. Y., manufacturer of traffic signals and control equipment, does not manufacture ornamental poles for traffic signals, but has developed a 4-inch pipe shaft pole with an ornamental cast Feraloy base, which is substantial and sufficiently ornamental for its utilitarian service.

The pedestals are made in two sizes, 16¼ inches and 34 inches in diameter. The short 34-inch pedestal is equipped with a shaft of 3-inch diameter pipe and is designed for mounting control cabinets. The longer pole, for mounting signals, has a tubular steel shaft of 4-inch pipe, and these poles are furnished with an overall height of from 5 to 10 feet.

The poles and pedestals are made to be mounted on concrete foundations. They require four foundation bolts, ¾-inch in diameter and 12 inches long. In the ornabular steel shaft of door which is fastened to the base with machine screws. The large opening of this door provides ample space for making splices and is sufficiently large to take the motor flashing switch for an electric flashing beacon.

A CROUSE-HINDS TRAFIC SIGNAL ON A C-H BASE AND STANDARD

The public safety...FIRST!

THE tremendous losses both in life and property suffered from traffic accidents, crime and fire are arousing the public. They are demanding effective, *modernized* protection...electrical protection. Good street lighting, for example. It combats crime...accidents. Boosts business... Reliable and adequate fire alarm equipment...Police radio to speed up the long arm of the law...Efficient traffic control to reduce costly and dangerous traffic congestion...The logical source for this equipment is Graybar. Graybar offers not only a complete line of equipment, but also expert and experienced advice on how to use it most effectively. Write for information.

GraybaR

OFFICES IN 79 PRINCIPAL CITIES
EXECUTIVE OFFICES: GRAYBAR BLDG., N.Y.

Distributed and guaranteed by GraybaR

THE NEW HOBART ELECTRIC THAWING MACHINE FOR SERVICES AND MAINS AT WORK

Winter Profits from Pipe Thawing

Every water department and water company loses money when service pipes are frozen. A new pipe-thawing machine developed by The Hobart Brothers Co., Box FR-174, Troy, Ohio, is available for thawing hidden pipes easily and quickly in basements, between partitions, and hard-to-get-at locations between floors of buildings. It requires only a few minutes to open up underground water pipes and mains which formerly took hours and required a large crew of men. Complete information and an interesting book on Pipe Thawing may be had without charge from The Hobart Brothers Co.

Jenkins Named V. P. of Gar Wood Industries

Ralph S. Jenkins has been appointed Vice-President in charge of manufacturing of all divisions of Gar Wood Industdustries, Inc., Detroit, Mich. Mr. Jenkins came from Minneapolis, where he has resigned as General Manager of the St. Paul Hydraulic Hoist Co., to become associated with Gar Wood. In 1921, Mr. Jenkins first became affiliated with the Wood Hydraulic Hoist & Body Co., when Gar Wood purchased the Horizontal Hoist Co., in Milwaukee. Starting as an assembly foreman, Mr. Jenkins' rise was rapid; he was promoted from General Inspector to Assistant Factory Superintendent, and finally to Director of all the company's branches, a position which he held until 1932 when he left Gar Wood to become General Manager of the St. Paul Hydraulic Hoist Co., in Minneapolis.

Fleming Made P.C.A. Regional Manager

The appointment of E. M. Fleming as Regional Manager of its eastern offices with headquarters in New York, and the naming of H. J. McDargh as Southeastern Regional Manager, has been announced by the Portland Cement Association. Mr. Fleming has been District Manager at New York since March, 1935. Mr. McDargh, who will make his headquarters in Atlanta, Ga., has been District Manager at Indianapolis since 1934. These men joned the staff of the Association in 1926 and 1924 respectively.

Graybar Electric to Distribute Parking Meters

Graybar Electric Co., 420 Lexington Avenue, New York, has announced that through its 79 branch offices it will distribute a new and improved parking meter manufactured by the Karpark Meter Corporation, of New York City, in its plant located in Cincinnati, Ohio. The Graybar announcement also states that by adding parking meters to its list of municipal products, which now include street lighting, traffic signals, police radio, and fire-alarm systems, it feels that it will be performing another real service for municipalities throughout the country.

Cleveland Buys New Stokers

Cleveland, Ohio, recently awarded a contract for $78,800 to the Stowe Stoker Division of The Johnston & Jennings Co., 287 Addison Road, Cleveland, Ohio, for three Stowe stokers to replace a like number of underfeed stokers in the Cleveland municipal light plant.

Increased demands on this plant necessitated a greater steam output. The Stowe stoker made this possible without the purchase of new boilers or material changes in furnace design. A Stowe stoker of 350 square feet active grate area will be installed under each of the 1400-hp Connelly boilers. The Stowe compensating feed principle gives a level fuel bed, making it possible to operate these boilers at 300 per cent of their rating. When this installation is completed, added economy will be obtained by the use of a less expensive fuel mined within the state of Ohio, carrying considerably lower freight charges than fuels from outside the state that were required by the older type of equipment.

These improvements in the municipal light plant are being made under the direction of Frank O. Wallens, Director of Utilities, and L. A. Quayle, Chief Engineer.

District Sales Manager of Link-Belt at St. Louis

Link-Belt Co., Chicago, Ill., has announced the appointment of Erwin A. Wendell as District Sales Manager, with headquarters at 317 North 11th Street, St. Louis, Mo. Mr. Wendell has been connected with the Link-Belt Pershing Road plant in Chicago since 1918, and for a number of years has served as Sales Engineer in metropolitan Chicago. In his new position, he succeeds Howard L. Purdon, who has been transferred to the company's Chicago plant to assume sales responsibilities in the Chicago territory.

Rockwell Heads Spring Company

Colonel Willard F. Rockwell, President of the Pittsburgh Equitable Meter Co., Pittsburgh, Pa., has been elected to the chairmanship of the Board of Directors of the Standard Steel Spring Co., Coraopolis, Pa., the largest manufacturer of automobile springs, with other plants at Racine, Wis., Gary, Ind., and Allegan, Mich. Mr. Rockwell's activities in the automobile industry have extended over a long period of years, and at present he also holds the presidency of the Timken-Detroit Axle Co., and the Wisconsin Axle Co.

New Toncan Culvert Sales Company in Indiana

The Toncan Culvert Manufacturers Association, Republic Building, Cleveland, Ohio, has announced the formation of a new company, which will represent Toncan Iron drainage products in Indiana. The new company will be known as The Indiana Toncan Culvert Co., with offices at 802 Inland Building, Indianapolis, Ind. The new company has taken over the business and affairs of the Indiana Culvert Division of the Truscon Steel Co., of Indianapolis.

W. H. Hampton and D. R. Sanders, long connected with the selling and promotion of Toncan drainage products, are the principals of the newly formed company.

Plans for Restoring Electrical Services Damaged by Floods

The General Electric Co., Schenectady, N. Y., has announced that it has shipped 35 carloads of repair parts and materials from its stock in Pittsfield, Mass., to the warehouse of its district office in Cleveland, where the company is concentrating men and supplies for relief activities and the restoration of impaired electric service in the flooded Ohio Valley. The shipment consists mainly of distribution transformers, cutouts, lightning arresters, and transformer oil. A carload of watthour meters was shipped from the G-E factory at West Lynn, Mass., to the Cleveland warehouse.

Large Meter Delivery to City of Boston

During December, 1936, and January, 1937, the Union Water Meter Co., Worcester, Mass., delivered an order of 2,800 Union water meters from $\frac{5}{8}$- by $\frac{3}{4}$-inch up to 4-inch, all disc-type meters. This was one of the largest orders placed for water meters in 1936.

December, 1936, was the best month for water-meter sales in the 77 years of the Union Water Meter Co., and the sales for 1936 were the largest since 1928.

EVERYTHING YOU NEED IN STREET LIGHTING

Pressed Metal Standards
Concrete Standards
Flood Lighting
Equipment
Cutouts
Ornamental Luminaires
Compensators
Glassware
Holophane Refractors
Ornamental Brackets
Cast
Iron Lighting Standards
Insulating Transformers
Suspension
Brackets
Oil Switches
Suspension Luminaires
Hewn
Cedar Standards
Mast Arms
Sockets
Protective Relays
Time Switches
Reflectors
Oil Station Lighting Equipment

HUNDREDS MORE IN THE L-M STREET LIGHTING CATALOG
WRITE TO SOUTH MILWAUKEE, WISCONSIN, FOR FULL INFORMATION

LM
LINE MATERIAL CO.

Outdoor Lighting

A Section of The American City
Devoted to the Lighting of Streets, Highways, Bridges, Airports, Athletic Fields and Parks, and the Floodlighting of Public Buildings

Which Is to Go Up?

Accidents or Street Lights?—You Can't Keep Both Down

By STUART R. WILLIAMS
Manager, Street Lighting Department, Holophane Company, Inc.

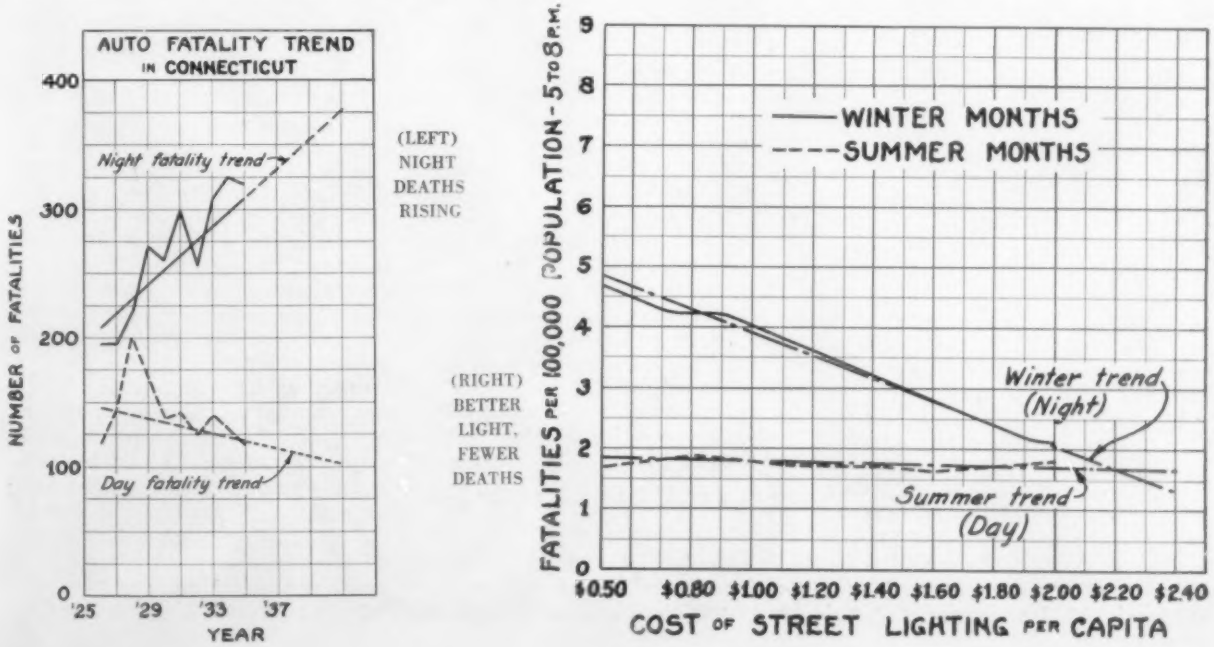
THE subject of safety is a varied one, and one which has become a truly national responsibility. Our Federal, state and municipal governments have always acknowledged and assumed a responsibility to make our cities and our country safe for every individual. Police protection, fire protection, health departments and research divisions, all are maintained to provide safety. The outstanding safety problem of today, however, is that of motor-vehicle safety. A program must be developed which will make our highways and our streets safe both for the vehicle drivers and for pedestrians.

Our Appalling Losses

As an indication of the seriousness of the problem, let us consider two aspects of the appalling figures of death on the roadway. First, there is the humanitarian aspect of blighted homes, deformed bodies, crippled children, and orphaned children. If there were no other considerations, these should be enough to make each of us realize our personal responsibility to effect definite improvement in safety measures. But there is a second aspect as well, and one which definitely involves a cost in which we all must share. This is the economic loss due to motor-vehicle accidents.

In 1935 there was a total of 826,960 motor-vehicle accidents, and a total of 36,100 deaths. Suppose we reflect for a moment on the seriousness of such a condition. Our losses in 18 months of the World War totaled 50,510 deaths, and yet in twelve months of peace-time motor vehicles destroyed the lives of over 36,000 people.

The National Safety Council has estimated the economic loss for 1935 to be $1,600,000,000. As taxpayers, each of us must assume his share of this loss. Certainly it justifies prompt and aggressive action to improve the condition and reduce the losses. How can we accomplish a substantial reduction? A number of ideas have been advanced, including such measures as more stringent motor-vehicle laws, rigid driver examinations, mechanical inspection of vehicles periodically, more rigid enforcement of laws enacted, and the installing of governors to control the speed of vehicles.



More Traffic Accidents at Night

Unquestionably, such measures will have some degree of effect, but figures compiled by the lighting industry definitely prove that the greatest possible advantage lies in providing stationary lighting along our streets and highways which will permit vehicle drivers to see objects in time to prevent collision. This is because night-time accidents cause approximately 60 per cent of deaths. It is estimated that the volume of night traffic is only about one-fifth of the total traffic volume, yet night traffic accidents cause the greater number of deaths. Applying this to the fatal accidents in Connecticut, for example, we find that there is eight times as much possibility of getting killed per car at night as there is in the daytime.

The State Department of Motor Vehicles of Connecticut has kept a record of fatal accidents over a ten-year period, and a chart showing the accident trend has been compiled. Because of more adequate safety measures, the trend of day fatalities is definitely downward, but the trend of night fatalities is sharply upward. This is shown diagrammatically on page 121.

We must take steps to bring the night trend downward. The best way to do this is to light our streets to provide an adequate seeing condition. That it can be done by adequately lighting our streets is indicated by a three-year study in Detroit.

Improved Street Lighting Decreases Night Accidents

During 1931 Detroit maintained a good street-lighting system, but in 1932, for economic reasons, the street lighting was curtailed to a value of approximately 65 per cent of 1931. Immediately motor-vehicle fatalities increased sharply. In 1931 there were 119 day fatalities and 124 night fatalities, a ratio of 1 to 1. In 1932, under the curtailment program, day deaths were 75 and night deaths 151, a ratio of 1 to 2. In 1933 street lighting was restored to 85 per cent of its 1931 value. This was immediately reflected in a reduction of night fatalities, the comparison between day and night being 90 to 138, a ratio of 1 to 1½.

In Buffalo, N. Y., a comparison of fatal accidents in the year 1933 (under curtailment of street lighting amounting to 39½ per cent) with the yearly fatal accidents of three years previous under normal street lighting shows an increase of 89½ per cent.

The Travelers Insurance Co. made a comprehensive survey and developed these startling facts:

Twenty-two cities increased their lighting in the amount of $0.093 per capita, and night accidents decreased 23.8 per cent.

Twenty other cities decreased street lighting by $0.19 per capita, and accidents increased 7.4 per cent.

Putting this into concrete dollars and cents value, those cities maintaining and improving their street lighting actually profited from a reduction in economic losses in the amount of $2.07 per capita, and those cities that operated under decreased lighting *paid* in excess economic losses $0.69 per capita.

Other studies of the relationship between street lighting and traffic fatalities have been based on the period from 5 P. M. to 8 P. M. in four winter and four summer months. These periods are selected because traffic conditions are about equal and this period in the summer is entirely daylight, and in the winter is entirely dark. A diagram showing the relationship between fatalities in vehicle accidents during these hours and the cost of street lighting per capita is shown on page 121. The daylight period shows a practically flat curve, at less than 2 fatalities per 100,000 of population. The period of darkness shows approximately 5 fatalities per 100,000 where the illumination is poor, and a continual decrease in fatalities as the illumination is improved. Carrying these curves to their meeting point indicates that $2.20 per capita is the minimum amount that should be spent for street lighting if streets are to be made essentially as safe by night as by day.

An Economic Loss Not Entered on the Books

It would appear that more action would be taken when information of this kind is available, but there is a definite reason why it is not. In one case the money is paid directly for a service rendered, and as such is placed on the books. In the other case, however, the money is paid indirectly in economic losses, and as such cannot be entered on the books. Nevertheless, it is paid and paid definitely.

This is indicated by an analysis by F. C. Caldwell, Professor of Electrical Engineering at Ohio State University. Professor Caldwell in his studies concludes that adequate street lighting will reduce economic losses from accidents by $187,000,000 annually. This is approximately $1.56 per person. When we consider this in addition to other benefits, we have an imposing argument.

Since 1919 the money expended for schools and libraries, for health and sanitation, for police and fire protection, and for charities has climbed sharply, while money expended for street lighting has climbed but little, and yet traffic volume during those years has increased by leaps and bounds.

Proper Placement and Distribution of Light

It might be well to explain briefly why lighting—proper lighting—will help reduce fatalities. You probably are of the opinion that with headlights on your vehicle you can see adequately, but such is not the case. We see an object either by light reflected by it to our eye, or as a dark object against a lighter background. A pedestrian in dark clothing or a dark-colored vehicle does not reflect very much of the light striking it, and consequently you do not see the object in sufficient time to avoid collision. On a wet night, light from headlights striking the surface of the roadway is reflected away from you rather than toward you, with the result that you do not see adequately.

By placing fixed light sources of adequate size along the street or highway, sufficient light is provided so that you see an object readily and quickly. By proper placement of these sources and proper light control, a ribbon of brightness is provided along the roadway so that objects are seen in silhouette against it. Only when we see an object can we avoid collision, and we *must* see that object *in time*. Remember that at a speed of 40 miles an hour, it will require 114 feet to stop a car. If you do not see an object at a distance greater than this, you cannot avoid collision.

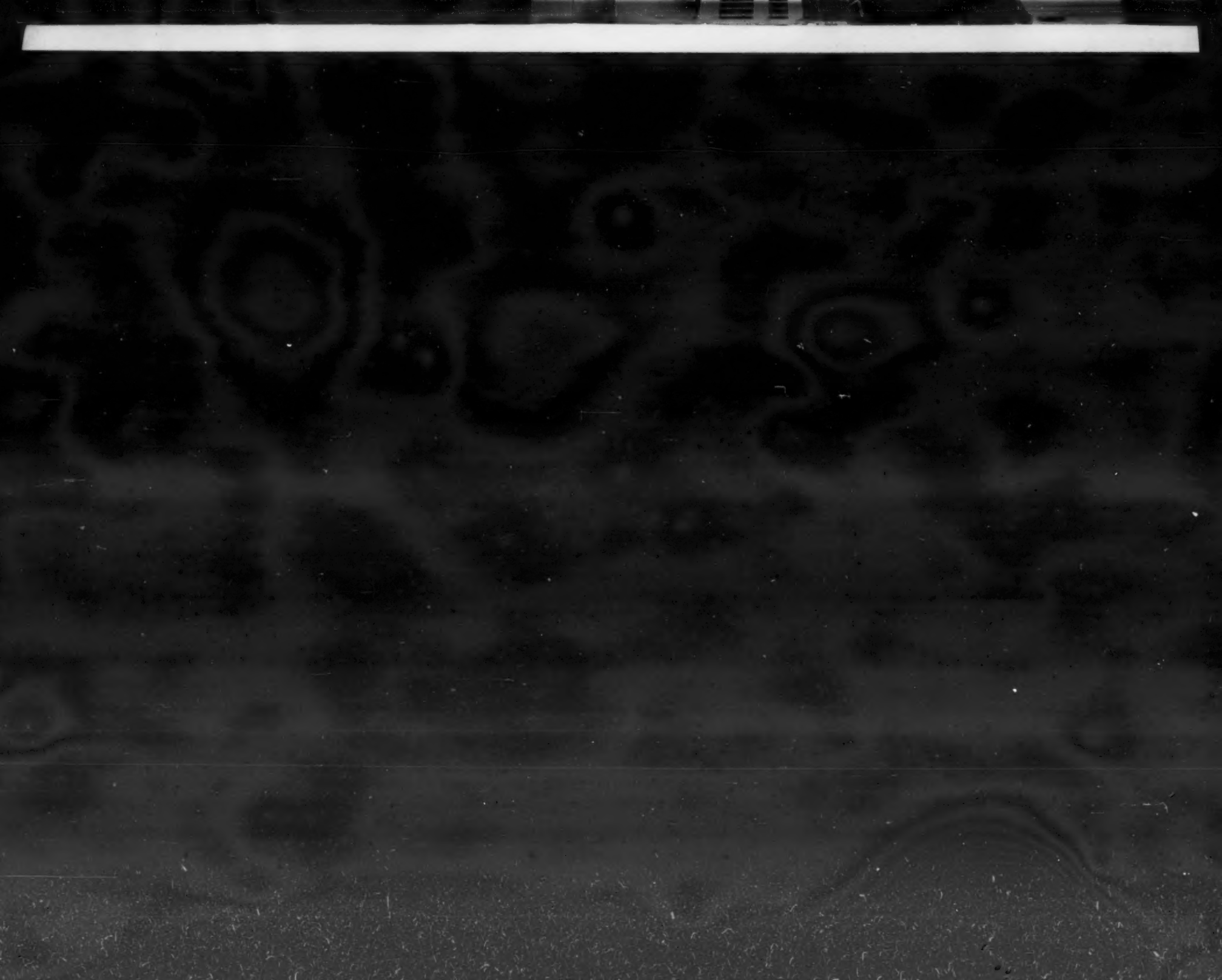
The design of such systems must include not only the proper placement of the luminaires, but in addition must include consideration of how the light from the luminaire is distributed. For efficiency and economy, the light must be confined to the roadway and must be distributed widely to improve vision.

This calls for a high degree of light control in order that light ordinarily wasted may be directed to the street area. In addition, this light must be properly distributed to provide essentially uniform horizontal illumination, and an approach toward uniform street surface brightness.

Modern Luminaires Make Better Distribution Possible

There are available today modern designs of luminaires which deliver an approximation of the ideal light distributions required. Refractors of prismatic glass or reflector-refractors, combining both metal reflectors and prismatic refractors, will provide light distributions that meet these visual requirements at economical ratios of spacing to mounting height. By proper application of these luminaires you can obtain street illumination that promotes safety.

Many of our street-lighting systems were designed for the traffic conditions of long ago and are inadequate to provide safety for present traffic. Modernization of these systems with equipment which will provide safe lighting with economy in operation and maintenance is imperative. This modernization will accomplish the result required—a national program of safer streets and highways because—*lighted streets are safer streets.*



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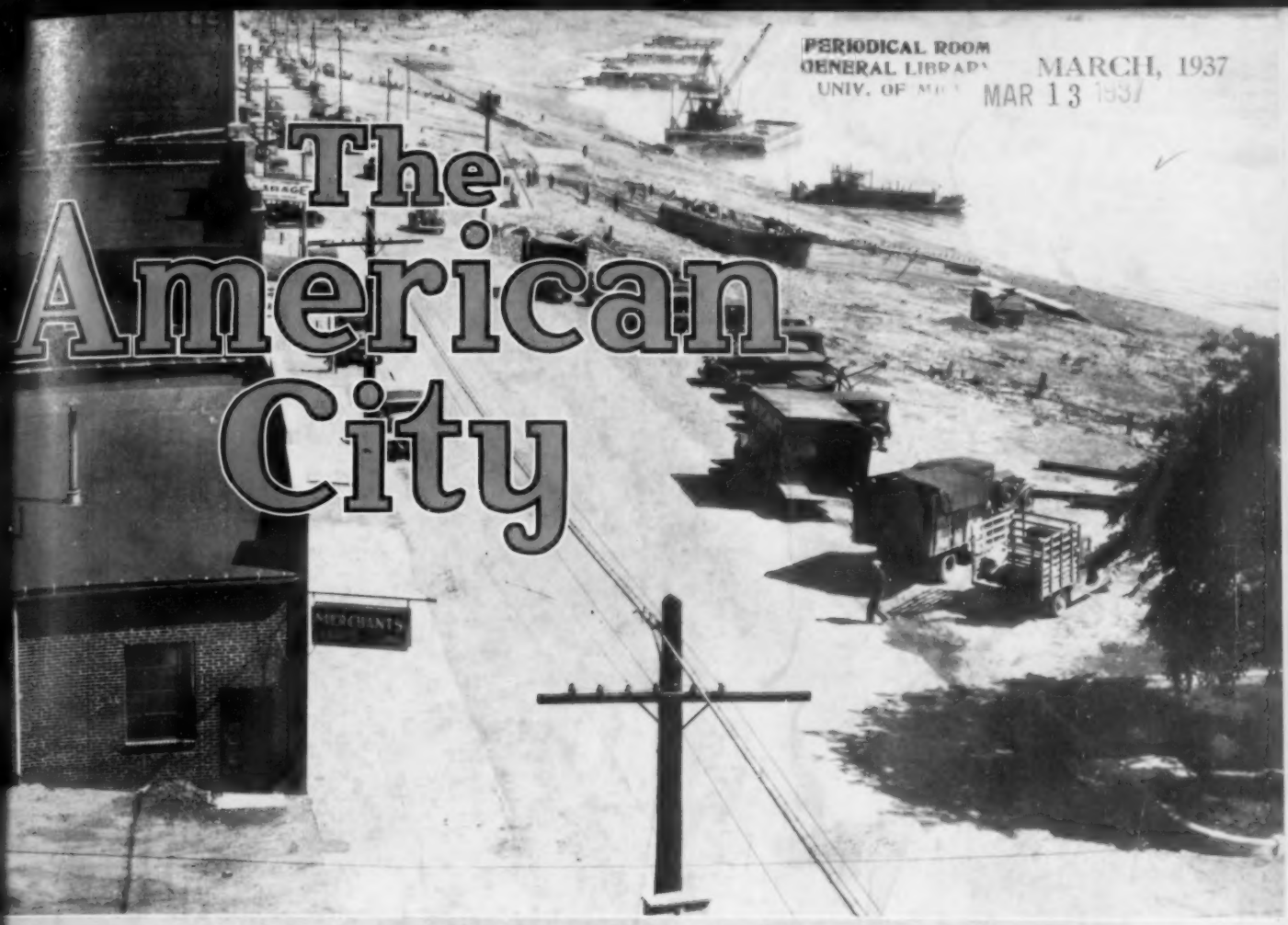

RIVER-FRONT, EVANSVILLE, IND., BEFORE AND AFTER IMPROVEMENT

(See page 101)